











CHAMBERS'S COMMERCIAL HANDBOOKS

COMMERCIAL GEOGRAPHY  
OF 437 SA  
THE BRITISH ISLES

BY

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## PREFACE.

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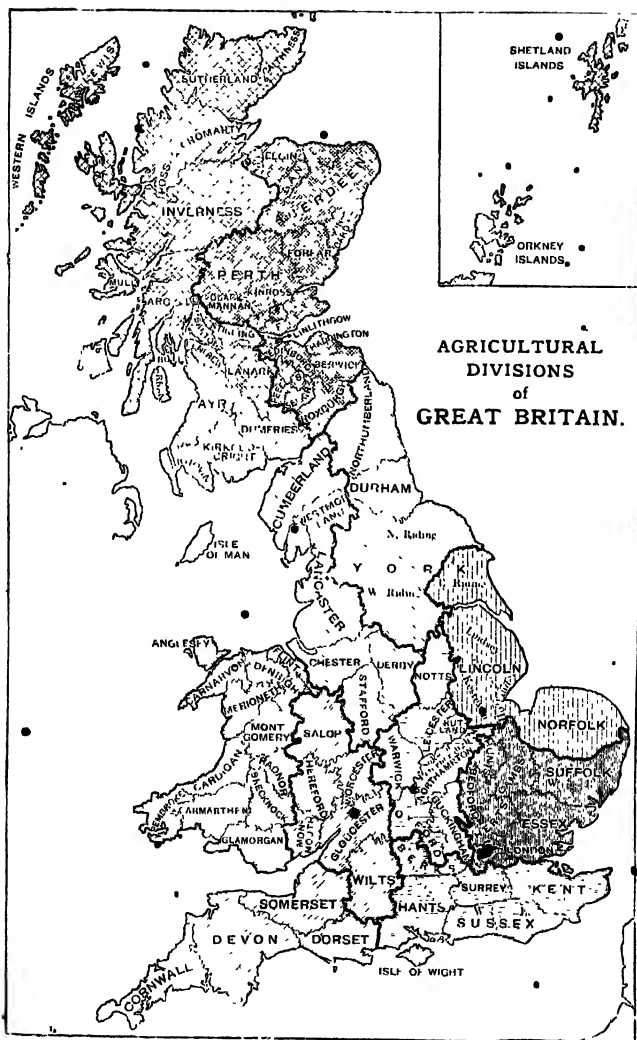
THE present book, first published in 1899, grew out of the courses of lectures on Commercial Geography given by the author in the Heriot-Watt College, Edinburgh. The chapter on trade-routes summarised a short course given in Manchester in connection with the Owens College and the Geographical Society.

The book is intended for students and teachers of Commercial Geography who begin with the Commercial Geography of the British Isles. One word of warning is perhaps necessary. The whole of the details given are not intended to be learnt by heart. Figures are frequently quoted merely for purposes of comparison, to illustrate the relative importance of different branches of production and trade.

Commercial Geography cannot be understood without a grasp of geographical principles and their economic bearings. In this connection the perusal of Dr Keltie's suggestive little book on *Applied Geography* is recommended. The study of recent trade and consular reports in the light of geographical principles is an admirable exercise. The *Statesman's Year-Book*, or some similar statistical annual, the weekly *Board of Trade Journal*, and the admirable weekly commercial newspaper, *Sell's Commercial Intelligence*, should be in the hands of every teacher who desires to bring his information up to date. The *Shipping World Year-Book* is useful for information regarding ports and tariffs. Such works should constantly be placed in the hands of students, who should be encouraged in every possible way to deal with information at first hand.

In preparing this book free use has been made of the numerous articles in *Chambers's Encyclopædia*, to which teachers are referred for fuller information. Mr Chisholm's *Handbook of Commercial Geography* and his *Gazetteer* have also been used; while most of the statistics have been taken either from Government Reports or from the 1910 edition of the *Statesman's Year-Book*.

The statistics throughout the book have been brought up to date in this third edition.



# AGRICULTURAL DIVISIONS OF GREAT BRITAIN.

DIVISIONS.	AGRICULTURAL DIVISIONS AND SUBDIVISIONS.	Total Area of Land and Water.	Returned as under Woods and Plantations in 1907.	Estimated Area of Mountain and Heath Land used for Grazing. 1909.		Returned in 1909 as	
				Acres.	%	Permanent Pasture.	Arable Land.
		Acres.	%	Acres.	%	Acres.	%
I.	(a) Beds., Hunts., Cambs., Suffolk, Essex, Herts., Middlesex, London, York, (b) Norfolk, Lincoln, York, E.R.	3,646,000	3.3	32,000	1.1	958,000	27.1
II.	(c) Kent, Surrey, Sussex, Berks., Hants. (b) Notts, Leicester, Rutland, Northampton, Bucks., Oxford, Warwick.	3,774,000	3.2	30,000	1.3	1,026,000	27.2
III.	(c) Salop, Worcester, Glou- cester, Wilts, Monmouth, Hereford. (b) Somerset, Dorset, Devon, Cornwall.	3,886,000	11.5	440,000	8.3	1,486,000	38.2
IV.	(a) Northumberland, Durham, York, N.R., York, W.R. (b) Cumberland, Westmorland, Lancashire, Stafford, Cheshire, Derby.	3,949,000	4.7	156,000	2	1,886,000	54.7
V.	Wales (12 counties).....	3,900,000	6.7	262,000	3.1	2,135,000	55.2
VI.	Scotland (East) .....	4,203,000	4.9	207,000	7.5	1,938,000	46.0
VII.	Scotland (West).....	5,077,000	4.1	208,000	21.6	2,170,000	42.7
		4,725,000	3.9	185,000	13.9	2,319,000	49.0
		4,778,000	3.9	184,000	27.8	2,053,000	43.0
		6,546,000	6.9	433,000	33.3	546,000	8.3
		12,915,000	3.2	416,000	53.6	941,000	7.3
	Great Britain.....	50,800,000	4.7	2,768,000	22.6	17,452,000	30.7
				12,843,000		14,731,000	27.9

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# COMMERCIAL GEOGRAPHY

## OF THE BRITISH ISLES.

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### INTRODUCTION.

ECONOMIC, or, as it is more often called, Commercial Geography, deals with the distribution of things of economic importance. It regards geography from the point of view of men's activities in getting food, shelter, and other material goods, and neglects all other aspects of the subject. The river Mersey, for instance, is of interest in Economic Geography, not because it rises in the Pennines and flows westward to the Irish Sea, but because its waters are available for turning machinery, for scouring, bleaching, and dyeing, and because its estuary forms one of the great waterways of the world. The Pennines themselves are important because of the grass on their sides, which feeds sheep, and because of the coal in their flanks, which is used as fuel in mills and houses, in the engines which convey freight between mills and markets, and in the steamers which sail from Liverpool and other neighbouring ports.

Economic geography, therefore, must take into account the geographical conditions which help man to make a living. The sea supplies fish and salt, and

is a pathway for his ships. The rivers supply water for domestic and industrial use, and, if navigable, afford an easy and cheap means of transport. The plains yield food for man and beast; the hills are pasture grounds; the very rocks yield stone for building purposes, clay for bricks, coal for fuel, iron and other metals for the necessary implements of manufacture and transport.

The occupations of men, therefore, have a natural distribution. On the coast they become fishers, sailors, or traders; on the plains, farmers; on the hills, shepherds; while mining and other industries depending upon coal and iron spring up where these sources of natural wealth are available.

Looking at a physical map of the British Isles, the south-east of Great Britain and the centre of Ireland are seen to be plains; the northern half of Great Britain and all the west and the corners of Ireland are generally mountainous, with plains of small extent. The south-east and east of Great Britain, therefore, are mainly agricultural, and the west mainly pastoral.

Agriculture is more developed in Ireland on the central plain than in the mountains to the north-west and south, but cattle-rearing is everywhere more important than the cultivation of the soil. This is largely due to the heavy rains, an illustration of the fact that climate as well as relief helps to determine the nature and distribution of occupations.

For many centuries minerals played a comparatively unimportant part in the economics of our island, except in the extreme south-west, where tin early attracted foreign traders to Cornwall. Salt was much in demand for preserving meat for the winter, and continued to

be so until the development of transport rendered the produce of distant markets available at all seasons of the year. At the dawn of history in Britain much of the land was uncleared forest, and hunting and fishing were the chief occupations. In Roman times the country must still have been densely wooded, for we find some of the main Roman roads leading over the bare mountain-tops, which were easier to cross than the wooded land below. In the regions that had been cleared of trees agriculture developed, and corn was exported to the Continent. Forest clearing, however, is a slow process, and for many centuries the chief product was wool from the numerous sheep which fed on the grassy slopes of the unwooded uplands. With the gradual clearing of the forests, agriculture became more and more important, but sheep-rearing remained the staple industry. The wool was not, however, manufactured at home, but was exported to Flanders. More than one English monarch attempted to introduce the woollen industry, and from time to time numbers of Flemish weavers settled in this country.

As the forests were gradually cut down and timber became scarcer, coal was increasingly used for fuel, and its consumption was enormously increased by the application of steam to machinery in the eighteenth century. The demand for machinery which sprang up at that time reacted on the iron industry, and led to the diversion of much land to industrial uses. Home production of raw material no longer sufficed for the rapid development of industry.

Meanwhile, although the population increased rapidly, the proportion of those engaged in raising food diminished, and the home food-supply became

quite inadequate. Foreign trade, therefore, had a twofold object—to dispose of the surplus commodities, and to supply the deficiency of raw material and food. Hence the paramount importance of trade, home and foreign, to our country, and the taunt sometimes levelled against us that we are a 'nation of shopkeepers.'

In studying the economic geography of Britain, therefore, we have to consider the geographical conditions as they affect such primary occupations as fishing, the rearing of animals, or the tilling of the soil; to explain the reasons for the distribution of its industries and industrial cities; and to describe the great internal trade-routes, the great ports, and the commodities carried in the ships that enter and leave them.

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## CHAPTER I.

### PHYSICAL CONDITIONS OF BRITAIN.

. **Mountains, Plains, Rivers, and Coasts.**—The physical features of the British Isles are of great economic importance. The high land of Great Britain lies in the west; the low land occupies the south-east and is nearest to the Continent of Europe. Ireland, farther removed from the Continent, is more or less isolated, and its east coast, which is nearest Great Britain, has few good harbours.

A line from the Exe to Whitby divides Great Britain into two parts—an older, hillier, northern and western part, and a younger, flatter, southern and

eastern part. The south-eastern plain reaches the west coast only at the Bristol Channel, and across the Cheshire plain to the Dee and the Mersey. These outlying portions of the plain separate the Cornish Heights from the Welsh Mountains, and the Welsh Mountains from the Pennine Uplands and the Mountains of Cumberland respectively. Farther north, the Central Lowlands of Scotland divide the higher ground into the Southern Uplands and the Highlands of Scotland, and permit communication from east to west. The long, narrow depression of Glenmore divides the South-east from the North-west Highlands.

Each of these regions of lower land, permitting ready communication from east to west of the island, is of great economic importance. In the case of England, the Bristol Channel serves as an outlet to the west through Bristol, Gloucester, Newport, Cardiff, and Swansea, corresponding to the estuary of the Thames, where London is the centre, on the east. Even more important is the flat Cheshire plain, which permits communication with the central plains of England. The Mersey estuary, with the great port of Liverpool, on the west coast, corresponds to that of the Humber, with Grimsby, Hull, and Goole, on the east coast. The Cheviot Hills and the Southern Uplands of Scotland practically shut off all communication between the two seas, and block the route to the north along the east coast, which is flat and easily traversed south of them. The great firths of the Forth and the Tay on the east, and of the Clyde on the west, stretch far into the heart of the Lowlands, and permit products to be easily received and distributed through Glasgow,

Greenock, and other west-coast ports, and through Leith, Grangemouth, Dundee, and other east-coast ports. This is the place to cut a great ship-canal across Great Britain, which would join the Clyde and the Forth, and prove of great commercial, as well as of great strategic, importance. The narrow depression of Glenmore is relatively unimportant from an economic point of view, as it is entirely in a mountainous region, and connects no great fertile plains or busy industrial districts.

From north to south the east coast is bounded by comparatively flat land, which is interrupted only by the Southern Uplands and the North-east Highlands approaching close to the sea, and by the Forth and the Tay, which necessitated long detours round their estuaries before these were bridged. Communication from the Thames almost to the very north of Great Britain has long been possible across the flat land along the east coast. The eastern barriers are not so formidable as those on the west coast, where communication was obstructed north of Lancashire by the Cumbrian Mountains, then by the Southern Uplands of Scotland, and lastly by the great extent of the Highlands. The lands around the Solway Firth could be reached only by the difficult route from the south between the Pennines and the Cumbrian Mountains, by the North Tyne from the east, or by the valleys of the Liddel, the Annan, and the Nith, which formed the equally difficult passes to the north. The valleys of the Tay and the Spey form passes across the centre of the South-east Highlands. The railways now traverse these, the easiest tracks across a difficult country.

The rocky, mountainous western coasts have many drowned valleys which form excellent harbours, but the lack of easy communication with the busy parts of the country makes most of these harbours comparatively unimportant, though Milford Haven forms a packet and naval station. The exceptions are where the estuaries are found in the western flat lands, and these are of the greatest importance now that the Atlantic Ocean has become a great highway for trading-ships. The chief are the Clyde, which reaches into the Lowlands of Scotland; the Mersey, which indents the Cheshire plain, across which the Weaver serves as a waterway; and the Bristol Channel, with the canalised Severn and the Warwickshire Avon communicating with the heart of England.

On the east coast, on the other hand, there are few good harbours except in the estuaries of the great tidal rivers and in the firths of eastern Scotland. The Tay and the Forth reach into the heart of the Scottish Lowlands. The Aberdeenshire Dee, the Tyne, and the Tees, though navigable only near their mouths, are outlets for important industrial regions. The Humber, the Wash, and the Thames are the most important in the south, and the chief waterways of the English plain reach the sea by them. The Humber is connected by the Yorkshire Ouse and the Trent with the flat lands of the north-east and centre of England. Parts of the Yorkshire Ouse and its tributaries, and almost the entire length of the Trent, have been rendered navigable by canalisation. The shallow Wash extends into the marshy Fenland, across which sluggish rivers like the Welland and the Great Ouse, now canalised, form waterways. The

Thames valley breaks through the line of chalk heights between the Marlborough and the Chiltern Hills, and serves as an outlet, not merely for the lowlands to the east of them, but also for those to the west. The canalising of the Thames and the Kennet has made them important waterways.

The south coast has many good harbours, such as Southampton Water and Portsmouth Harbour, but the line of chalk Downs which flanks it prevents ready communication with the interior, where the Kennet and the Thames form the natural route to the sea. The south-western harbours at Plymouth Sound and Falmouth Bay are excellent, but have little land behind them, while most of what there is is relatively unproductive upland.

Many of these physical hindrances to communication have been overcome by engineers in the last half-century, and now the railways follow not merely the lowlands that we have mentioned, but travel over the hills through passes like that of Shap, or tunnel through the oolitic and chalk scarps of central and southern England.

In Ireland the mountains lie, as a rule, round the coast, thus leaving a great central plain. This central plain is drained mainly by the Shannon, a navigable river expanding into great lakes, and forming a wide estuary, which, unfortunately for Ireland, opens to the west and not to the east. In the south, west, and north there are many good harbours, but they are in the more hilly regions, have relatively difficult communication with the interior, and do not face Great Britain. The southern and northern ports, however, are more favoured in this way than the

western, as the ports in the south communicate with the south-west of England and the Continent, and those in the north with the west of the Scottish Lowlands. The most important openings are Waterford and Cork Harbours in the south, and Lough Foyle in the north. The east coast has few good natural harbours, that of Belfast Lough being the best. Dublin, at the mouth of the Liffey, is on a gentle incurve of the coast, but Dublin Bay is not naturally a good harbour, and engineering works have been necessary to form the harbours at Dublin and Kingstown. Even now vessels of the largest size cannot get up to Dublin.

**Climate and Vegetation.**—‘All flesh is grass,’ says the Preacher, and all animals ultimately depend on plants for their subsistence. Plants alone have the power of obtaining food from the simpler elements found in the air, water, and soil. This they can do only in the light, and when there are sufficient heat and moisture. Their distribution thus depends on that of sunshine, heat, and moisture; in other words, on climate. The nature of the soil and drainage must also be taken into account, but where the climate is unfavourable good soil and drainage do not avail.

In spite of their situation in the northern part of the north hemisphere, between latitudes  $50^{\circ}$  and  $60^{\circ}$  N., the British Isles are specially favoured as regards climate. They lie to the north-west of the continent of Europe, and rise above the waters in the north-east of the Atlantic Ocean. Land near a great ocean has a more equable climate than that remote from the sea, and if the prevalent winds blow from the warmer parts of the ocean, as in the case of the British Isles, such a

country has an exceptionally equable and mild climate. Our land is therefore better suited to the growth of plants than most other lands in similar latitudes. The prevalent winds come from between south and west at all seasons of the year, and blow over stretches of warm Atlantic water. When they reach our shores they are heavily laden with moisture, most of which is visible in the form of clouds. The western mountains deflect the clouds upwards, leading to cooling and condensation. This makes them still denser, and causes heavy rains along the western coast and the west of the higher lands. On the other side of the mountains the air begins to descend again, becoming warmer and drier as it sinks once more to the sea-level. On the whole, therefore, the mountainous parts, more particularly their western slopes, are cloudy and rainy; the plains, more particularly in the east, are clear and dry. This has a very important effect on the nature of the plants grown, which in the west are species thriving best in dull, rainy conditions, and in the east those which require a relatively dry, clear climate.

In dull, wet regions plants run to leaf; their fruits mature more readily under drier and sunnier conditions.

From an economic point of view, the fundamental difference between west and east is that in the west those economic plants flourish whose leaves are of most use (and of these grass is by far the most important), and in the east cereals and fruits ripen well. The grass-lands of the country are found in the west and in the uplands, the grain and fruit regions in the plains, more particularly on the eastern side of the mountains.

Temperature, however, as well as humidity, must

be taken into account. For every additional 300 feet in altitude the temperature falls on an average  $1^{\circ}$  F.; for every additional degree of latitude it falls a little more than  $0.5^{\circ}$  F.; so that in the higher lands and in the north the conditions are less favourable for plant growth than in the plains and in the south. The temperature of winter is less important than that of summer, for grains and fruits require warm, sunny weather to ripen them, while many seeds and trees can withstand hard frosts. Moreover, many seeds are not sown until the winter is over.

The winter temperature of the British Isles varies little from north to south, but diminishes from west to east. Hence grass grows at all times of the year in the lower parts of the western section of the country, whereas in the east and in the higher lands the cold winters interrupt its growth.

The east is warmer in summer than the west, because it is less influenced by the cooling action of the sea, and the temperature is higher in the south than in the north; so that in summer the south-east is the warmest and the north-west is the coolest part of the British Isles. The dry, warm lands of the south-east are those that favour the ripening of the cereals. Above a certain height the summers are too cold for this to take place, even where the rainfall is suitable. Hence the highest parts of the British Isles are either bare or covered with poor grass, heather, or bracken; or, in the western parts, where the water accumulates in the hollows, great peat-bogs or mosses occur. In Scotland more than three-quarters of the land is unproductive, but in the south of Great Britain and in Ireland the proportion of waste land is less than a quarter. Thirty-

six per cent. of the United Kingdom is covered with permanent grass, and 26 per cent. grows cereals and other crops, including grasses under rotation.

**Soils.**—Soils are formed of decomposed rocks. They may be divided into clays, sands, and loams. Clays consist of very fine particles that are easily pressed together, and so do not let water pass through them easily. Sands are very different; their particles are larger and looser, and water easily percolates through them. Loam is a mixture of clay and sand in almost equal parts, and may contain more or less organic matter. The organic matter in soils is known as humus, and is of very great importance, its presence making soils fertile.

Lime is found in most soils in greater or smaller quantities, and is very useful when not too abundant. A very limy soil may contain as much as 20 per cent. A clay with a fairly large proportion of lime is called marl.

Soils depend in the first place on the nature of the rocks from which they are decomposed. Soils formed from immediately underlying rocks in the place where they are found are by no means the commonest in the British Isles. They occur mainly south of the Thames, where chalk and flints enter so largely into their composition that they are not very fertile. Many of the limy soils, like those of the Downs and the chalk and oolitic scarps, produce excellent grasses, which form food for many sheep.

Most of the soils of the British Isles are mixed, as the greater part of the archipelago has been covered by glacial drift. The ice, passing over many kinds of rocks, has ground up the waste of these together

to form boulder clay. There is a very noticeable difference in the fertility of the soils north and south of the Thames, the former being one of the richest agricultural soils in the British Isles, because of the mixing brought about by the ice in a region where very many different kinds of rock are found close together. The open clays which form good wheat-land are mixed soils.

Rivers, passing, as they do, through many different kinds of rock, bring down rock-waste of different composition and a large amount of vegetable débris. This makes the river alluvium, which is a very fertile soil, and much of the Fenland and the valleys of the Yorkshire Ouse and the lower Trent is formed of it. Alluvium occurs in the flood plains, and borders the estuaries of all great rivers. •

There is considerable difference in the fertility of the soils derived from the older rocks. Many of the volcanic soils are fertile, but the hard crystalline rocks of the western mountains yield a comparatively poor soil. On the other hand, the Old Red Sandstone and many Carboniferous rocks yield fertile soils, but the limestone which covers so much of Ireland is not a specially favourable one for agriculture.

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## CHAPTER II.

### THE BIOLOGICAL CONDITIONS OF BRITAIN.

**Grass-lands.**—Where the elevation is over 1000 feet or the rainfall more than 40 inches a year, the land is almost entirely covered with grass, unless

special conditions of temperature or soil make it waste land. This grass-land includes all the mountain area of the western parts of the British Isles. In these districts, as a rule, the grass forms permanent pasture and is little broken up for cultivation, although here and there a patch of ground is sown with oats, and in Ireland considerable areas are planted with potatoes. In the other parts of the islands grass is found either as meadow-land or coming in rotation with other crops. Much of the cultivated grass is used for hay, but the proportion of this is less in Scotland, where the summer is cooler and more rainy than in other parts of the kingdom.

In Ireland 49 per cent. of the land is covered with permanent pasture, whereas in Great Britain the proportion of permanent pasture is 31 per cent. (Scotland, 7·8 per cent.; Wales, 43 per cent.; England, 43 per cent.).

**Cultivated Lands.**—The drier and lower lands in the east, more particularly of Great Britain, are cultivated. In Ireland 18 per cent. of land is arable, in Scotland 18 per cent., in Wales 19 per cent., and in England nearly 35 per cent.

Of this land the greater part is cultivated with a rotation of crops—cereals, roots, and grasses—of which cereals are the most important, except in Ireland and Scotland, where only 36 per cent. of the arable land produces cereals, compared with 44 per cent. in Wales and 50 per cent. in England. The principal cereal crop in the British Isles is oats. Two-fifths of the cereal-land of Great Britain and five-sixths of that of Ireland is sown with this grain. The oat flourishes in the cold, moist summer of the northern and western

parts of the kingdom, and the limit of its successful cultivation is fixed by the limit of early autumn frosts, which in the far north, or at a considerable height above the sea-level, kill the plant before the grain has matured. Only in England is less than half the cereal-land covered with oats.

Wheat is the most important English cereal, about three-tenths of the arable land being sown with it. One-quarter of the land producing cereals in Great Britain is sown with wheat, but only one-thirtieth of that of Ireland and of Scotland, and nearly two-fifteenths of that of Wales. Wheat requires a warm, dry summer, and the climate of south-east England and its rich soil are specially suited for raising heavy crops. Much of the wheat grown here is winter wheat—that is, wheat sown before winter; and although this is one of the colder regions of the British Isles, the wheat-plant is hardy enough to stand the winter temperature. Wheat-growing on an extensive scale is restricted to the south-east of England, not because the other parts of the kingdom are colder in winter, but because they are colder, wetter, and more cloudy in summer.

Barley, the most widely distributed of all grains grown by man, requires less sun than wheat, and many varieties have the advantage of ripening a week or two sooner after sowing than the oat, so that they can be reaped before the autumn frosts appear. A quarter of the land producing cereals in Great Britain, and about one-eighth of that in Ireland, is sown with barley. The wheat-growing area of England is also the region where most barley is produced. The barley of this region is exceptionally well suited for

brewing, and is cultivated for industrial rather than food purposes.

Little rye is cultivated in the British Isles, and that mainly as a green food, though some is allowed to ripen for its valuable straw.

Great changes have taken place in the last half-century in the cereal-producing areas of the British Isles, and in the nature of the crops sown. In Great Britain the cereal-land has been reduced, by one-tenth in twenty years, and in Ireland by one-fourth. Formerly half the cereal-land in England was sown with wheat and only one-fifth with oats, whereas now two-sevenths are wheat and three-sevenths oats. In Great Britain over 40 per cent. of the cereal-land used to be wheat land and 50 per cent. oat-land; now the figures are reversed. The proportion of barley has remained almost constant. In Ireland only 2½ per cent., instead of over 10 per cent., is wheat-land. The area of cultivated and permanent grass has grown correspondingly, having increased by over 50 per cent. in Great Britain in twenty years. This is largely owing to the cheapness with which cereals can be imported from all parts of the world by the numerous quick steamer services which have grown so rapidly in the past half-century.

After cereals the green or root crops are the most important cultivated plants of the British Isles. The potato, introduced from America, and the turnip, grown as a field-crop since the end of the seventeenth century, are important food-stuffs. Potatoes, turnips, and mangolds are sown on an area about 18 per cent. of the arable lands in England, 12 per cent. in Wales, 17 per cent. in Scotland, and 28 per cent. in Ireland.

Potatoes flourish in the moister west, and are by far the most important crop grown in the west of Ireland. Sixty per cent. of the land producing root and green crops yields potatoes in Ireland, but only 18 per cent. in Great Britain. In the west of Great Britain the proportion of potatoes to cereals is also greater than in the east. East Lothian and Fife, in Scotland, however, are both noted for potatoes which are largely in demand in restaurants owing to the skins not breaking on reheating.

Turnips are of special importance in the sheep and cattle rearing regions, where the animals are fed on them in winter. They are abundantly cultivated in all counties of England outside the corn area. Over 10 per cent. of such counties as Norfolk, East Riding of Yorkshire, Berwickshire, and East Lothian is sown with turnips every year. The production of the mangold is chiefly carried on in England, and the area is gradually increasing.

Of the industrial plants, flax and hops are the most important. Flax is grown extensively only in Ulster; about 4 per cent. of the arable land of this province is sown with it. The western counties of Donegal, Fermanagh, and Cavan produce much less than the eastern ones. A little is sown in one or two Scottish counties.

The production of hops is practically confined to the counties in the south of England—Kent, Surrey, Sussex, Hants, Hereford, and Worcester.

The cultivation of fruits on a considerable scale is confined to the south-east of England and the Severn Valley, but many small orchards and fruit-farms exist in favoured localities throughout the British Islands, especially in the east.

Market-gardens abound round the large cities, more particularly near London and in the Channel and Scilly Islands.

**Woods.**—Over 5 per cent. of England, 4·5 per cent. of Scotland, 4 per cent. of Wales, and 1½ per cent. of Ireland is covered with forests. In England, Kent, Surrey, Sussex, Hants, and Monmouth are the only counties with more than 10 per cent. of their surface wooded; and in Scotland Kincardine, Aberdeen, Elgin, and Nairn are the regions with the densest plantations—all these counties except Aberdeen having more than 10 per cent. of their surface wooded. It will be seen that the densest woods exist in the driest hill regions of the islands.

Deciduous trees, such as the oak, beech, elm, ash, alder, and maple, are commonest in the plains and fertile lands. In the northern and higher regions these give place to pine-trees. Many mixed woods of deciduous and coniferous trees exist, especially in the valleys of the mountainous regions.

**Useful Animals.\*—Cattle.**—The distribution of animals is largely determined by the distribution of grasslands. The rich meadow grass of Ireland and the western part of England is especially suitable for cattle. The proportion of cattle in Ireland is twenty-three to the hundred acres, and in England and Wales about fifteen, while in Scotland it is only six. In England and Wales cattle are most numerous in the counties of Cheshire, Leicester, Pembroke, Cornwall, Lancashire, Somerset, and Staffordshire. In all

\* Much of the information in this section is obtained from Dr Fream's admirable *Elements of Agriculture* (6th ed.; London, 1897).

the counties named there are over twenty cattle to the hundred acres. In Scotland, in no county are cattle so numerous. The majority are found in western counties like Renfrew and Wigtown, where the grass is rich and the winter mild, or in the Lothians, Fife, and Aberdeen, where they are fattened for the market. Galway is the only Irish county with less than fifteen cattle per hundred acres; while the counties of Limerick, Meath, and Dublin have over thirty cattle per hundred acres:

There are over a dozen native breeds of cattle in the British Isles. Of these by far the most important is the Shorthorn, which, originating in the Tees district of Durham at the end of last century, has spread all over the country, and is also widely distributed abroad. It is a breed noted for its beef and milk, and easily adapts itself to different climatic conditions.

Dairy cattle are found principally on the low lands, where rich meadow grass is obtainable. The Shorthorn, the Longhorn of the Midlands of England, the Red or East Anglian polled cows, those of South Devon and of Kerry in Ireland, are among the chief breeds; but, above all, the cows of Ayrshire, in Scotland, and of Jersey, Guernsey, and Alderney, are famous as milk producers.

The large cattle which are reared for their beef belong to the Shorthorn breed, found in all parts, or to the Hereford, Sussex, Welsh, Galloway, or Aberdeen breeds, whose distribution is indicated by their names.

Some breeds, such as the Shorthorn, the East Anglian, the Devon, the Welsh, and the Dexter Kerry, are reared both for meat and for milk.

The Highland cattle are a small but very hardy

breed, living on the poor pasture of the Scottish mountains, and, like the larger Galloways, yielding good beef.

Many of the cattle reared for the butcher are stalled, and feeding-stuffs of many kinds, some imported, are used.

Cows that are used for dairying have to be treated differently to cattle fattened for the market. To produce milk rich in fats, which are necessary both for butter and cheese making, a richer diet is essential, as cows that feed on poor pasture yield milk which is small in quantity and poor in quality. Dairy cows require much more careful attention than cattle reared for the butcher.

**Sheep.**—Broadly speaking, sheep are found chiefly in regions where cattle are few. They are commoner in the drier east than in the rainier west. They are found on the hillsides rather than on the plains. The chalk Downs of England and the Southern Uplands of Scotland are the best sheep-regions; but large numbers feed on the steep and easily-drained hillsides of the west, where they are reared principally for their mutton, whereas those on the eastern heights are bred largely for their wool as well as for their flesh. In England about fifty, in Wales seventy-eight, in Scotland thirty-eight, and in Ireland twenty sheep are found to the hundred acres. There are more sheep per hundred acres in Roxburgh, Selkirk, and Berwick than anywhere else in the kingdom. In Kent, Romney Marsh and the Downs are both suitable for sheep rearing, and one sheep is found to every acre. In all the counties through which the Downs extend the proportion of sheep is considerable. Cumberland, Westmor-

land, the limestone height counties, and most of the Welsh counties except Pembroke and Carmarthen have more than fifty sheep to the hundred acres. In Scotland all the southern counties, as well as the south-west of the Highlands, are noted for their sheep. In Ireland, Connaught and Leinster have more sheep than either Ulster or Munster; Carlow, Wicklow, and Galway being the counties which have over forty sheep per hundred acres.

The mountain sheep, such as the blackfaced and the Cheviot sheep of Scotland and the Welsh mountain sheep, are usually horned, and as a rule have rough fleeces, with thick, strong wool. They yield mutton of very fine quality. Except these, together with the Border Leicesters of the south of Scotland and the Roscommon breed of Ireland, all the other varieties of sheep are English. Of these, the most important are the long-woolled Cotswolds, Leicesters, and Lincolns, and the short-woolled sheep of the Downs and Shropshire. The pure Leicester is largely used for crossing with other sheep, especially those fattened for the market. The Southdown sheep, with fine short wool, has been used for crossing with, and thus improving the breed of many short-woolled sheep, some of which now form distinct varieties, like the Oxford Downs.

There are many varieties of sheep confined to limited regions, such as those of Romney Marsh, the Exmoor sheep, the Wensleydale, the Limestone breed of Westmorland, and others.

Horses are largely found in the drier parts of the British Isles, on less hilly ground than the sheep. In England, the three Ridings of Yorkshire, Norfolk, Cambridge, and Huntingdon have more than five

horses per hundred acres; and in Ireland, Down, Wexford, and Louth have the same number, and Dublin has double. In Scotland most horses are reared in Fife and Linlithgow; but the proportion is only about three per hundred acres.

There are two types of horses—the heavy work-horses, of which the Shire, the Clydesdale, and the Suffolk are the different breeds; and light horses, such as the thoroughbred, the hackney, the Yorkshire carriage-horse, and the small ponies which are found in the less accessible, less fertile, and more rugged parts of the island, such as the Shetland Islands, the Highlands of Scotland, the Welsh mountains, Dartmoor and Exmoor, and the New Forest. The Yorkshire coach-horse is bred in the north-eastern counties, more particularly in the North and East Ridings of Yorkshire itself. The hunter and thoroughbred are reared in different parts of England and in Ireland. The hackney or nag is reared chiefly in the eastern counties, more particularly in Norfolk, Cambridge, Huntingdon, Lincoln, and Yorkshire. The Shire is the largest work-horse, and is reared mainly in and around the Fens. The slightly smaller and more graceful Clydesdale is bred in the region which gives it its name. The Suffolk horse is still smaller in size, but is long-lived and a good worker.

**Figs.**—The proportion of pigs to cattle is greatest in the south-east of Ireland and England; but the largest number per acre is found in such eastern counties as Suffolk, Essex, Middlesex, Bedford, Cambridge, Huntingdon, and such western ones as Flint, Cheshire, Anglesey, Somerset, Dorset, and Cornwall. The total number in England is over five, and in

Wales under five, per hundred acres. In Scotland, most pigs are reared in Clackmannan, Wigtown, and Midlothian; but they are comparatively few. On the other hand, in Ireland most counties rear more than six pigs per hundred acres; the proportion being least in Connaught and greatest in Wexford.

Most pigs in Britain are white in colour, and are distinguished as Large, Middle, or Small White breeds. There are two black breeds, known as the Small Black of Suffolk and Essex and the Berkshire breed; while the Tamworth sow, originating in Staffordshire, is red.

The Large White sows yield a great proportion of lean meat and can be grown to enormous weights, whereas the Small White sow usually makes very fat bacon.

**The British Farmer and his Competitors.**—In spite of the large quantities of farm produce of every kind grown in the British Isles, the supply is wholly inadequate to the consumption of the country, and cereals, vegetables, meat, and dairy produce of all kinds are imported in ever-growing quantities. While the yield of English wheat crops per acre is higher than that of any other country in the world, except that of the small wheat-producing area of Scotland, the British farmer has found it difficult to compete with the settler who has cultivated the virgin lands of America or the rich black soil of Central and Southern Russia. He labours under the disadvantage of cultivating a soil which requires heavy manuring and careful tillage to produce good crops, while the high rent paid for land and the cost of transport by rail more than counterbalance the advantages due to the proximity of his markets. Rent and freight charges

will undoubtedly be reduced ; but even then the British farmer will find the best guarantee for success in even more skilled farming than that for which he is already famous. Agriculture involves great scientific knowledge as well as practical skill ; and in the matter of agricultural education our country has been comparatively backward compared with the United States, Denmark, and some of our colonies. With a more careful and intensive use of the natural agents of the country, the quantity and quality of pastoral and agricultural products may be still further improved ; and in the future agriculture will probably become much more important than it is even at the present day.

**Fisheries.**—Fishing is a great source of food-supply. In this country fresh-water fish are comparatively unimportant. The salmon and sea-trout, which migrate between salt and fresh water, are caught in the rivers, mainly in the estuaries of Scotland, western England, and Ireland, more particularly in the Spey, Tay, Tweed, Severn, Bann, and Shannon.

The sea fisheries are exceedingly valuable. The turbot, sole, flounder, and other flat fish ; the cod, haddock, herring, mackerel, and pilchard, are the most important fish caught. The waters over the shallow banks of the North Sea, and round the islands in the north and west of Britain, are visited by fishermen from many ports. From every little fishing village men fish with hand-lines, catch shellfish in traps, and go out in fishing-boats to the adjacent fishing-ground, where both lines and nets are used. The great centres of population are supplied with fish from the fishing-ports, which send out fleets of sailing and steam trawlers and other fishing-vessels, some of which have

tanks where fish can be kept alive until the ship returns to port. The fish may be sent from the fishing-grounds in swift carrier steamers direct to London or to the nearest port, whence they are despatched by special fast trains to the great cities. The east coast fisheries are the most valuable, and three-quarters of the fish are landed in England at east coast ports.

Fish are caught by hooks or in nets, which are either fixed or hauled. Short lines, whose hooks are rebaited after each fish is caught, are used close to the shore all round the coast. The east and south coast fishermen send out very long lines (some even eight miles in length, in eastern England), to which hundreds of baited hooks are attached. These are sunk across the current to let the short lines, to which the hooks are attached, float clear of the long one. When hauled in, haddock (in Scotland), cod (in the east of England), cod, ling, conger, skate (in the south of England), and many other predaceous fish are caught. The Scottish fishermen use mussels for bait, those in southern England squids or cuttlefish.

Where the bottom is smooth a trawl is used. It consists of a netted bag, with finer meshes near its end, the mouth of which is fixed to a beam raised a little above the bottom. This is hauled along and brings up flat-fish such as flounders, soles, plaice, halibut, turbot, and others, together with fish that feed at the bottom of the sea, like cod, haddock, hake, and ling. The trawls are sometimes carried by large sailing-vessels, but oftener by steamers. From Aberdeen, Leith, and Granton, trawlers go eastwards to the banks in the North Sea. In eastern England, Hull, Grimsby, Yarmouth, Lowestoft, and Ramsgate send

trawlers to the Dogger Bank in winter and to the east of the North Sea in summer, whence the fish are sent to these ports or to London by fast steamers. On the south coast, Brixham and Plymouth are the chief trawling stations, the boats going as far in summer as the north coasts of Cornwall, where east coast boats also come. In the Irish Sea, Cardiff tugs often trawl off Lundy Island, and regular trawlers leave the Lancashire ports of Liverpool, Southport, Blackpool, and Fleetwood, especially for the seas round the Isle of Man, to which Whitehaven and Dublin send trawlers, as well as Douglas.

Migratory fish, such as the herring, mackerel, and pilchard, are caught in nets. Drift-nets are sunk across a current, and the heads of the fish are entangled in the meshes, which vary in size according to that of the fish to be caught. The herring is much the most important. It is caught chiefly off the Scottish coast in the west early in the year; in the north in summer; farther and farther south, along the east coast of Britain, as the year advances; and in the English Channel in winter. The ports of the Clyde sea-area, Strone Ferry, Stornoway, Lerwick, Wick, Fraserburgh, Peterhead, Aberdeen, and the Forth ports are the chief Scottish centres of the herring-fishing; and the north-east of England ports, especially Whithy, and Yarmouth farther south, are the chief English centres. Off the south coasts of England and Ireland mackerel-fishing is very important. Pilchard-fishing is confined to the south-west of England. The pilchards are caught in nets, which are let down across a bay such as that of St Ives in Cornwall, and hauled to land by ropes. Sometimes so many fish are trapped

that a number of smaller nets have to be used inside the barrier formed by the big one, which would break with the pressure of the fish were it drawn ashore.

Many 'shellfish,' such as lobsters, crabs, shrimps, and other crustaceans, are caught in traps or netted, and oysters and other molluscs are dredged.

About 42,000 men are engaged in fishing in Scotland, 39,000 in England, and 23,000 in Ireland; but the value of the English is two and a half times that of the Scottish fisheries, and twenty-five times that of the Irish, mainly owing to the nearness of large markets. In Scotland about ten men, and in Ireland about five men in every thousand are fishermen. In England and Wales the proportion is one man per thousand.

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## CHAPTER III.

### DISTRIBUTION OF MINERALS AND MINING CENTRES.

THE mineral wealth of the British Isles is mainly in the older rocks of the west and north. In the newer rocks of the south-east, clay (for making bricks), lime, and chalk are the most important mineral products.

The older rocks yield valuable minerals, and most of the sandstones and limestones can be used for building purposes.

**Building Materials.**—Of the building stones, the most important are the sandstones of Carboniferous and Permian times; but the oolitic limestones are also used for building purposes. The granite rocks of Aberdeenshire, Galloway, and Galway are quarried for stones

suitable for massive structures, such as bridges and reservoirs, where great strength is required, and for ornamental stones to be used in public buildings. Marble is quarried in Ireland.

Carboniferous limestones, as well as those of more recent date, are burned to yield lime, which is used as mortar or as a purifier or a fertiliser. Portland stone is ground to form an exceptionally quick-setting mortar known by the name of Portland cement.

In many parts of the older regions of the British Isles local stone is used for building purposes, whereas in the south-east of Great Britain nearly all the houses are built of brick. The hard old red sandstones of Caithness can be cut into large, flat, thin slabs which form excellent pavement.

Slates for roofing\* purposes are formed of rocks which are easily split into thin layers. These are usually clays which have been subjected to great heat and pressure. Purple slates are found in Wales, more particularly round Llanberis and P'estiniog. The green slates of Tilberthwaite in Cumberland are the most beautiful of all, and different blue, gray, and purple slates are found in various parts of Scotland, more particularly in Perthshire and Argyllshire (at Easdale and Ballachulish), and in Ireland (in Cork and Tipperary).

Some Carboniferous rocks are useful for making fireclay, more particularly those of 'The Potteries' in North Staffordshire, those round Kilmarnock in Ayrshire, and those in Tyrone. Fine pottery is made in 'The Potteries' and in Worcester, whither kaolin or china-clay, a decomposed granite suitable for making the finest porcelain, is taken from the Cornish peninsula.

**Coal.**—Coal is the chief mineral mined in the British Isles. Iron and coal are two of the great sources of our industrial prosperity. ‘The rich underground kingdom of the English and Scottish coalfields has often been called the Black Indies.’ As coal is used in reducing the ores of the useful metals, especially iron, we shall study its distribution first.

Coal is found in the Carboniferous rocks, and therefore in the west and centre of Great Britain. The coal has been preserved in the rocks which form the trough of the Scottish Lowlands. In England the coal-measures covered the whole of the Pennine heights, but, though they are still found on both flanks, they have been worn away from the summits. They are also found where the Carboniferous rocks bend down on the eastern and south-eastern sides of the Welsh Highlands. In Ireland, which was formerly entirely covered by coal-measures, only a few isolated patches of coal now remain.

Coal-mining is carried on in Ireland at Castlecomer in Kilkenny, and at Dungannon in Tyrone, but is not important. The chief fields in Great Britain are the Scottish coalfield, divided into the western or Ayrshire coalfield, the central coalfield in Lanark, Linlithgow, and Stirling, with an outlier in Clackmannan north of the Forth, and the smaller fields of Fife and Midlothian; the Northumberland and Durham to the north-east, the Cumberland to the north-west, the Yorkshire, Derbyshire, and Nottinghamshire to the south-east, the South Lancashire and the North Staffordshire to the south-west, of the Pennines; the North Wales, the Shropshire and Worcestershire, the Forest of Dean, and the South Wales coalfields on the borders of the

Welsh mountains; the Midland in South Staffordshire, Warwickshire, and the borders of Leicestershire and Derbyshire, and the Bristol, both surrounded by young rocks.

(Those in large type are the most important.)

Coal is usually mined; but in a few places it is simply quarried. Its value has long been known. There is evidence that it was quarried even in Roman times. Sea-coal was sent to London from Newcastle from the thirteenth century onwards. With the clearing of the country and the growing scarcity of timber, the use of charcoal for iron-smelting became too expensive, and in the eighteenth century coal came into general use for this purpose. This gave a great impetus to the extraction of coal. New mines were opened and carried deeper and deeper to meet the ever-increasing demand due to the application of steam-power to machinery. The output has steadily increased, and was never greater than at the present time, when over 260,000,000 tons are raised yearly. The Yorkshire, Derbyshire, and Nottinghamshire field is the richest, yielding 62,000,000 tons. The Northumberland and Durham field puts out 54,000,000 tons. The South Wales coalfield produced over 40,000,000 tons in 1908, the Scottish coalfields 39,000,000 tons, the Lancashire coalfield 24,500,000 tons, the two Staffordshire coalfields 13,500,000 tons, and the others put together 14,000,000 tons.

The quality varies considerably in the different coalfields. In most it is a soft black coal, producing considerable heat and smoke. The cannel coal of central Scotland was formerly almost exclusively used for making gas, but it is now almost exhausted.

Anthracite from the South Wales coalfield supplies the smokeless coal for our navy, and is the fuel used in breweries.

The coal yielded in the various coalfields is put to very different uses.

In Scotland it is used in the iron and textile manufactories, more particularly in the west, as well as in Fife and southern Scotland. Much is exported from the Forth to the North and the Baltic Seas, to the Mediterranean, and even farther; from the west,



Scottish Coalfields.

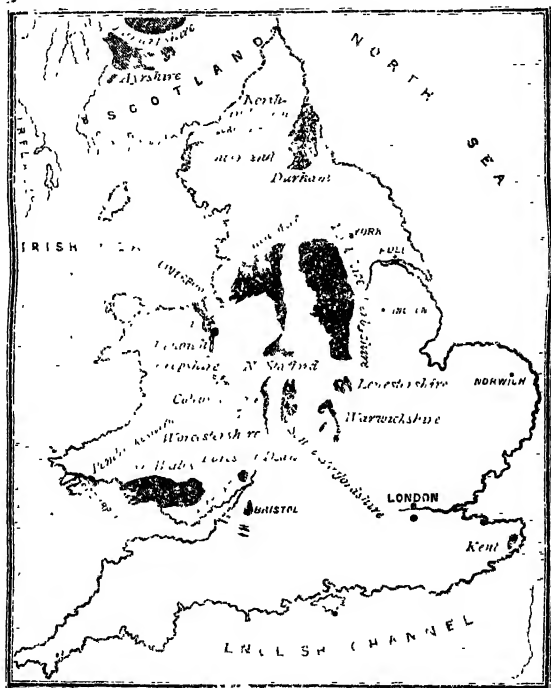
chiefly to Belfast and the North of Ireland. The latter region also receives the surplus coal from the Cumberland coalfield, much of whose output, however, is used in smelting iron ores in Furness.

The output of the Northumberland and Durham coalfield is largely used in the iron industry. The surplus is exported, large quantities being shipped to London and all over the world.

The York, Derby, and Nottingham coalfield supplies the woollen manufactories of the West Riding of Yorkshire, the ironworks of Sheffield, and the textiles

works of Nottingham. Any surplus is exported to London by rail, or from Goole on the Humber.

The coal of the South Lancashire coalfield is almost entirely used in the local cotton manufactories and



English Coalfields.

engineering and chemical works. It also supplies fuel for steamers sailing from Manchester and Liverpool. Hardly any is available for export.

The North Staffordshire coalfield supplies steam-power in the pottery district.

The Midland coalfield supplies fuel for the Black Country in South Staffordshire, the great centre of the iron manufacture. Large quantities are sent by rail to London.\*

The North Wales coal is used locally and in the salt and chemical works of Cheshire.

The Shropshire-Worcestershire coalfield, stretching between Coalbrookdale and Bewdley, supplies the ironworking region of South Staffordshire to the east, the Worcester potteries to the south, and the woollen manufactures at Kidderminster.

The Forest of Dean coalfield provides the coal needed in the local iron smelting and forging.

The Bristol coalfield supplies that city and the West of England woollen manufacturing centres.

South Wales coal is shipped to all parts of the world. Some is used in the district for smelting different ores. Many of these are imported, copper being brought even from distant Chile and red hematite from Spain, as it is less difficult to carry the ores to the coal than the coal to the ores. Anthracite

\* 'Of the coal-basins in Great Britain, the Midland coalfields are the least favourably placed for foreign trade. The Scottish basin is encircled and penetrated by the sea. The estuary of the Clyde on one side and the Firth of Forth on the other open it up by their long fjords, and form, as it were, large natural canals. The Durham and Northumberland coalfield stretches in the direction of a coast-line with numerous and excellent ports, among which it will be sufficient to mention Newcastle and Sunderland. The Welsh coalfield is provided for by the long estuary of the Bristol Channel. In the presence of three rivals so well equipped for exportation, the Midland coalfields are quite naturally designed to carry on the home trade.'—Quoted, with slight modification, from *The Labour Question in Britain*, by Paul de Rousiers. Translated by F. L. D. Herbertson. Page 165. London, 1896

is sent to the great brewing centres, to vessels in the British navy, and to all our naval coaling stations.

**Iron.**—Iron is by far the most important of the metals obtained in the British Isles. It is found in several forms. In the more recent rocks, pouches of iron exist here and there, and used to be worked before the discovery of the richer deposits in the older rocks. They occurred mainly in the chalk rocks, and the timber of the wooded Weald was used for smelting them. The finest British iron ore is the red hematite of Cumberland and North Lancashire, which is an oxide of iron easily reduced to the pure metal. The brown hematite, not quite so rich in iron, is mined in South Wales, the Forest of Dean, Northamptonshire, and Antrim. Blackband and clayband iron ores, impure carbonates of iron, are common in most of our coalfields, as, for instance, in the Scottish Lowlands. The fact that iron and coal so frequently occur together has had much to do with the rapid development of the manufacture of iron in the British Isles. Another great advantage is that lime, which is used as a flux in smelting, is generally also present in the same region, together with a plentiful supply of fireclay.

Middlesbrough has become the most important iron-smelting centre in Britain since the discovery of a suitable method of obtaining iron from the ironclays, which form much of the Cleveland Hills in north-east Yorkshire. It obtains coal from the Durham and Northumberland field, and limestone is found comparatively near. Magnetic or black iron ore, the finest of all, is imported from Sweden to the ports of Durham and Northumberland, to be smelted mainly

at Middlesbrough, Stockton, Darlington, and the Tyne ports. The Scottish Lowlands are important iron centres. The local blackband, and clayband iron ores are supplemented by red hematite from Spain. Glasgow, Airdrie, Coatbridge, Motherwell, and Kilmarnock are the chief centres. Barrow is the great centre for smelting the red hematite of the Furness region, with coal brought from Cumberland, Scotland, or Lancashire. South Wales receives most of the great imports of Spanish iron ores, through Swansea, Cardiff, and Newport, and the smelting is carried on at Newport, Merthyr Tydfil, and other centres. The iron ore of the Midlands is smelted in and around Birmingham, at Wolverhampton, Dudley, Walsall, Wednesbury, and other places, mainly in South Staffordshire. Iron-smelting is important in the West Riding of Yorkshire, especially at Rotherham.

**Other Metals.**—Traces of the precious metals are found in many parts of the United Kingdom, but rarely in quantities sufficient to pay working expenses.

The Cornish peninsula has long been one of the chief European sources of tin. Copper is also found, but the ore is now almost exhausted. Zinc is mined along with lead in the North of Wales and in Northumberland. Léad, in the form of silver-lead ore, from which both metals are extracted, is also found in the Lead Hills in Scotland, in Cumberland, Northumberland, Wales, the Isle of Man, and the Wicklow Mountains in Ireland.

**Peat.**—In Ireland, northern Scotland, and other regions where great peat-bogs exist and coalfields are distant, peat is cut and dried for fuel. In Ireland it is even used industrially; and this use of peat will

largely develop with the discovery of a suitable process for turning it into coke.

**Oil-shale.**—In the midlands of Scotland, more especially in Midlothian, West Lothian, and Fife, large quantities of oil-shale are mined. This oil-shale is a compressed black clay, from which burning and lubricating oils can be distilled and candles and other paraffin products extracted.

**Salt.**—One of the most useful minerals is salt. On many parts of the coast it is obtained by evaporating sea-water, but great beds of rock-salt exist in the valley of the Weaver in Cheshire (near Northwich), at Droitwich in Worcestershire, and in south-east Durham. From these beds salt is obtained either by mining or by pumping the brine, but principally by the latter process. In addition to its domestic utility, salt is used in Worcester to form a glaze for pottery, and in Cheshire, South Lancashire, and in the north-east of England in various chemical industries.

## CHAPTER IV.

### DISTRIBUTION OF MANUFACTURES AND MANUFACTURING CENTRES.

**Rise of Manufactures.**—The manufactures of the British Isles, now so important a branch of national activity, developed but slowly until last century. They grew out of the domestic industries necessary in an early stage of society, when every household was more or less self-supporting. Then, doubtless, every housewife spun wool or flax into yarn, wove the yarn into

cloth, and made the cloth into clothes and napery, while the men provided shelter, weapons, and implements.

One of the first trades to become important was that of the smith. Our Teutonic forefathers deified Thor the Hammerer. Confined in early times to the forging of armour, weapons, and implements, the smith's trade has now become increasingly complex with the extended use of iron in the arts of peace and war, until at the present day engineering is one of our most important occupations.

In the same way the other domestic industries of primitive society have developed into highly-skilled industries carried on by specially-trained workmen. Spinning or weaving now forms the only occupation of thousands of people. The grinding of grain into meal, the baking of flour, and the fermenting of grain have similarly become special trades practised by great bodies of men. The tanning of hides and the making of leather goods are now also special occupations. With the opening up of the country the trades connected with transport of various kinds grew up, developing later into the great railway industries. The ancient Briton made his small canoe in the roughest way; the modern Briton constructs great ships which sail to the uttermost parts of the earth.

**Classification.**—Manufactures can be classified in several ways, as, for instance, those dealing with the production of food, those having reference to shelter or protection, and those concerned with transport. Another possible classification is according to the nature of the raw material—mineral, vegetable, or animal; still another according to the process of manu-

facture—mechanical, chemical, or biological. For instance, the making of cloth is a mechanical process, the making of dyes a chemical one, and brewing a biological one. No hard-and-fast line, however, can be drawn, for the manufacturer of cloth often dyes it, and the brewer has chemical as well as biological processes to consider. The problem of the manufacturer—to transform some natural product into an artificial one, which will be of greater use than the unworked raw material—is on the whole a simpler one than the brewer's, which is to transform organic materials into their most utilisable form. Here we shall deal first with the mechanical industries connected with clothing, shelter, and protection, such as the textile and iron industries, and then with the chemical and biological ones.

### The Textile Industries.

**Historical.**—The textile or spinning and weaving industries have grown very gradually. Several unsuccessful attempts were made by English kings to introduce them as special industries before the efforts of Edward III., in the fourteenth century, led to the settlement of weavers in East Anglia and elsewhere. The chief centre was round Norwich, more particularly in the village of Worstead, which has given its name to worsted goods. Numerous other manufacturing centres existed over the chalk Downs. The populous and prosperous south-east of England was the chief industrial region until the discovery of coal led to a shifting of the woollen centres.

Woollen and linen manufactures had grown up both in Lancashire and Yorkshire; but these were far

removed from the more densely populated regions. Kendal green was a famous cloth in the Middle Ages. Manchester cottons, probably a mixture of wool and linen, are also mentioned in old works. At the end of the fifteenth century the Yorkshire woollen manufacture was stimulated by the settlement of a large number of Flemish weavers. With the application of coal to industry, those manufacturing centres which were favourably situated for obtaining wool and coal, and were well supplied with water for scouring and dyeing, grew at the expense of the others. The once great woollen manufacture of Norwich declined because neither coal nor water-power was available.

**Sources of Power.**—During the past century steam has been the chief source of power used in industry. To-day the use of electricity is becoming more and more common, steam being used to generate it. Attempts are being made to cheapen its production by utilising wind and water power (forces which at present are but little used) for this purpose; and probably these two sources of power, as well as the tides, will be more and more utilised in the twentieth century. This may lead to a considerable rearrangement of the industrial centres, which would tend to develop in regions with abundant water-power—that is, in the mountainous parts of the country—and more particularly near the coast, where water transport is available for obtaining raw material and distributing manufactured goods.

**The Manufacture of Woollens.**—Before the arts of spinning and weaving were discovered, men probably pounded the wool fibres together into a felt. Before

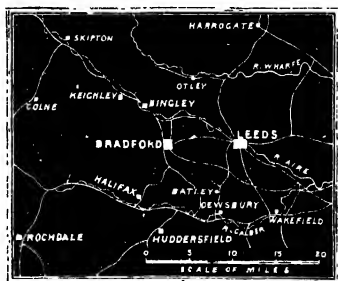
wool is manufactured at the present day it is first of all cleaned and scoured in pure soft water, such as that of the streams of the Southern Uplands of Scotland, where there is no limestone. A little alkali is added to the water to remove the natural grease in the wool. The wool is next teased to separate the fibres, and oiled to keep them from snapping in the course of carding and spinning. Carding is the process of separating each fibre of the wool, after which a number are condensed together and then spun or twisted round and round into yarn. The yarn is next woven into cloth. A series of parallel threads of yarn is fixed to form a warp, and another thread is made to cross this warp at right angles (under some threads, above others), forming the weft of the cloth. The cloth is then scoured to clean and soften it, and milled or felted to make it more compact. The old way of felting or fulling was to soap the cloth, and then beat it with big hammers; but it is now milled in a machine. The felting property, which is peculiar to wool and hair, makes woollen cloth denser and more compact than that made from vegetable fibres. Dyeing may be done at any stage of manufacture, most commonly after the wool is scoured or the yarn spun; but for some purposes the material is not dyed until after the cloth is woven.

**Woollen Manufacturing Centres.**—Although all the wool produced in this country is not manufactured in it, and considerable quantities are exported to other woollen manufacturing centres on the Continent, the home supply of wool does not suffice for the woollen manufactories. Much is brought from Australia, South Africa, and other countries; and manufacturing

## DISTRIBUTION OF MANUFACTURES.

centres near good ports have an advantage over others, especially if they are also near a good coal and water supply. At the present time the woollen manufacture is carried on in three chief centres—in Yorkshire, the west of England, and the Tweed valley.

The **Yorkshire woollen centre** is exceptionally favourably situated as regards the easy supply of raw material and the distribution of the manufactured articles. It lies half-way between the Irish and the North Seas, with the great ports of Liverpool on the west and Hull on the east. The hills of Yorkshire afford pasture for innumerable sheep, its coalfield is of almost inexhaustible richness, and it is excellently watered. The chief centre of the woollen manufacture is Leeds,



Woollen District.

on the Aire. Many other large towns have grown up, such as Bradford, and the towns in the Calder valley—Halifax, Huddersfield, and Dewsbury.

The **West of England woollen centre** has also its port, Bristol: the coalfields of Bristol and the Forest of Dean are near; and numerous streams drain the Cotswolds. Stroud in Gloucestershire, and Bradford in Wiltshire, are the most important centres. The scarlet cloth for uniforms is manufactured at Stroud.

The **South of Scotland woollen centre** has some of these advantages—uplands for pasture, mountain rills and streams, but less accessible coalfields. Peebles,

Galashiels, Selkirk, Hawick, and Jedburgh on the Tweed and its tributaries, Langholm on the Esk, and Dumfries on the Nith are the chief manufacturing towns. They manufacture cheviots and tweeds (the former so named from the hills where the sheep feed).

Outside these three centres the chief woollen manufacturing towns are Bury and Rochdale, both near Yorkshire, which combine woollen and cotton manufactures. Some woollen manufacture is carried on on a small scale in many towns both in Great Britain and Ireland, more particularly where wool is plentiful. Flannels are made at Welshpool and other towns in the upper valley of the Severn, which are near the West Shropshire coalfield. Witney in Oxfordshire is noted for blankets. Kidderminster and Wilton make carpets. Leicester hosiery has long been famous. Hand-loom weaving has not quite disappeared, and the strongest cloth made in the British Isles is probably the Harris tweed, manufactured in this way in the Outer Hebrides.

**The Manufacture of Linens.**—Linen thread and cloth are made from the fibres of the flax-plant. The plants are uprooted as the seeds ripen, and these are taken off or 'rippled' to make linseed oil and cake. The fibres are separated from each other by allowing the stem to rot or partially rot—that is, ferment—either in soft water or simply on wet grass. They are next dried, and then broken, which permits the removal of the woody parts. This process is called 'scutching.' The fibres are combed or 'heckled,' and the long fibres, or 'line,' separated from the short fibres, or 'tow,' and the line is prepared for spinning, the next process it undergoes. Successful spinning requires a certain humidity of the air, and the finer linen threads are spun when quite wet. The linen yarn is finally woven into cloth.

**Linen Manufacturing Centres.**—Historically the manufacture of linen is next in importance to that of

wool; flax, like wool, being a home product. In the time of Charles I., Wentworth introduced the cultivation of flax into the north-east of Ireland, which is the principal seat of the production of lint and linen at the present day. Although Ulster has no coal, except at Dungannon, it is conveniently situated opposite the Ayrshire and Cumberland coalfields, whence cheap supplies can be procured. The water of Ulster is very suitable for bleaching linen, which is the chief manufacture of Ireland. Belfast is by far the most important centre, making all kinds of linen goods, but especially the finer sorts. Lisburn, Lurgan, and most of the towns of Ulster manufacture lawn, cambric, and fine linen. Outside Ireland linen is spun and woven principally in Fife, where Dunfermline, the chief centre, is noted for its table-linen. At Kirkcaldy coarser linens are made; and in Forfarshire—at Dundee, Brechin, and Arbroath—still coarser goods, such as canvas and sailcloth, are woven. Fife possesses several special advantages. Flax is imported from the Baltic, which lies opposite to Fife; and coal is obtained from the Fife and Clackmannan coalfields. The constancy of the temperature and of the humidity of the air are favourable climatic conditions. Barnsley, the only important centre in England, lies in Yorkshire, east of the Pennines, and, like Kirkcaldy, makes upholstery linen.

**The Manufacture of Cotton.**—Raw cotton consists of the fibrous hairs surrounding the seeds of the cotton-plant, which belongs to the mallow and hollyhock family. It flourishes between the tropics, but is now grown in favourable places in the warmer parts of the temperate regions. The fine white hairs are

separated from the cotton seeds by a machine called the gin. The seeds, like those of the flax-plant, yield oil and form a food-stuff for animals, while the stalks are made into paper. The 'cotton-wool' is carded, drawn, and spun into yarn, and then woven into cloth. Little more than a century ago cotton yarn could not be spun strong enough to make the warp, for which linen or wool was used. Nowadays both warp and weft are of cotton, and this pure cotton cloth is called calico. Cotton is also used mixed with linen, with wool, with silk, and other fibres to make different varieties of yarns and cloth.

**Cotton Manufacturing Centres.**—All raw cotton is imported. Consequently the regions near the great ports have greater facilities for obtaining it than those far inland; and, as most of it comes from America, the west coast ports are more favourably situated than those on the east. Bristol, Liverpool, and Glasgow, the three great ports of communication with America, are respectively connected with the three great western coalfields of South Wales, Lancashire, and Scotland. The climate and waters of Lancashire and Scotland are specially favourable for the cotton manufacture, which requires a fairly damp atmosphere for successful spinning and weaving. A great development of the cotton manufacture has occurred in the past century. Formerly cotton was mixed with other fibres; but since the introduction of steam-driven machinery the manufacture of pure cotton goods has developed until it is now the most important industry of the country. A century ago the cotton manufactured was worth little more than one-twentieth of the woollen; but at the present day it is worth double, while the value

of the linen manufactured is only one-fifth that of the cotton. By far the greatest proportion is manufactured in South Lancashire, in the towns surrounding Manchester, such as Stockport (which, however, is in Cheshire), Ashton, and Stalybridge;\* Oldham, Rochdale, Bury, and Bolton; and in the towns on the north of the Lancashire coalfield, Burnley, Accrington, Blackburn, and Preston. Manchester manufactures little, but is the great market and distributing centre.



Cotton District.

In Scotland cotton is manufactured—chiefly into cotton thread—at Paisley.

Most machine-made lace is composed of cotton threads, for the linen threads of which the beautiful, delicate hand-made lace is formed are too fine for machinery to manipulate. Nottingham is the chief centre of cotton-lace and net manufacture.

**Cotton, Woollen, and Linen Manufactures.**—‘A century ago the value of cotton, woollen, and linen yarns and piece goods produced in Great Britain and Ireland was about £22,000,000—say,

\* Stalybridge is partly in Lancashire, but principally in Cheshire.

woollen, £17,000,000 ; linen, £4,000,000 ; and cotton, £1,000,000. Of recent years the value has been about £200,000,000—say, cotton, £120,000,000 ; woollen, £55,000,000 ; and linen, £25,000,000. The total amount of capital employed is about £250,000,000 ; and at least 5,000,000 people—men, women, and children—are dependent upon these textile industries for their livelihood. Moreover, one-half of the value of British and Irish products exported consists of textiles.\*

**Jute and Hemp Manufactures.**—Jute is a plant of the lime-tree order, which flourishes in hot, moist climates, in regions with rich soil, such as the Ganges delta. It grows five, ten, and even more feet high, and the fibre is separated by rotting, like linen from the flax-stems. The manufacture of yarn and cloth is carried on very much like that of linen, but all the fibres are carded. Jute is a long, strong, silky fibre, and the finer tissues assume a silky appearance. Unfortunately it is difficult to dye in fast colours. Jute carpets, curtains, handkerchiefs, and fabrics may be made ; but the staple jute product is coarse sacking for bags. The manufacture of jute is almost entirely confined to Dundee, Arbroath, and Montrose, all in Forfarshire.

In these towns hemp is also spun, and rope-making is carried on all round the coast, as every seaport requires it. Hemp is grown in most European and many other countries ; but our supply comes largely from Russia, especially from Poland. New Zealand hemp and the Manila hemp are strong fibres derived from quite different plants.

**Silk Manufacture.**—Silk, like wool, is a fibre of animal origin. It is secreted as a fine thread by the caterpillar or larva developed from the egg of a moth.

\* Thomas Edison in the *Statesman's Year Book*, 1899.

This silk thread forms a cocoon, within which the larva passes a quiescent stage of its life; then it dissolves part of the silk cocoon, and emerges as a moth again. The silk-rearer heats the finished cocoon, and thus kills the larva. He then softens with hot water the gum binding the silk threads, and unwinds and reels up three or four or more of the fine fibres together as one thread, known as raw silk. This is cleaned and twisted into thread and woven; but sometimes the raw silk itself is used for the warp. Spitalfields, in London, was long famous for silk-weaving; but few looms are now employed there. The manufacture of silk is scattered up and down the country, the chief centres being Macclesfield, Derby, Coventry, and Leek (threads for needlework), while silk waste is manufactured in Bradford. The raw silk is all imported.

**Fibres for Textile Manufactures.**—The fibres used in our textile industries are few in number. Flax, cotton, jute, and hemp are of vegetable origin; wool and silk of animal origin. Vegetable fibres, like the ramie or China grass, have been tried. China grass is an exceptionally strong and beautiful fibre, but hitherto the difficulties of preparing it for spinning have prevented its general adoption for cloth-making. Several hundred fibres at least exist which might be used for textile purposes; and it is desirable that systematic experiments should be made to test the value of each of these, samples of which are to be found in the great collection at Kew Gardens.

### **The Iron Industries.**

In the past century iron, and in recent years steel, a specially prepared form of iron, have largely replaced wood as a constructive material. Iron beams and pillars are used as supports in building; iron or steel

is the most common material for bridges; rails are laid with it, and it enters largely into the construction of trucks and of carriages; the locomotives that draw the trains are made of it, and we traverse our roads on steel bicycles. Machinery of all kinds is mainly constructed of steel; our ships are almost entirely built with that metal, and the guns and projectiles of our navy and army are principally composed of iron in some form or other. Less striking, but equally important, is its use in bolts, screws, and rivets, for purposes too numerous to mention.

South Staffordshire has long been a famous centre of the iron manufacture, for the timber of its forests was used for smelting the iron ore of the neighbourhood long before its coal was utilised. All kinds of metallic goods are turned out here, from the proverbial pin at Birmingham to the anchor at Tipton. Nail and chain making are carried on at Cradley Heath; locks are made at Walsall and Wolverhampton; keys at Wednesbury; and tin-plate, gun-barrels, armour-plate, great girders, and railway plant of all kinds are turned out in the numerous factories of the busy district of which Birmingham is the chief city. This region is distinguished among the other industrial regions of the country by its large number of small workshops.

On the Yorkshire-Nottinghamshire coalfield the iron industries are centred round Sheffield. The Sheffield district is famous for cutlery and tools of every kind, and, in addition, every sort of steel work is made—armour plates, engine castings, shot, rails, and machinery of all kinds. Both coal and iron are found in the neighbourhood; but for the finer steels the black iron ores from Sweden are imported. Rock is also found

near Sheffield which makes exceptionally fine grind-stones, suitable for use in the making of cutlery. Here, as in the Birmingham district, electroplating is an important trade. Leeds is also an important centre for iron goods.

**Textile Machinery** to supply the woollen manufacture of the West Riding of Yorkshire is made at Keighley and Bradford. The machinery used in the cotton manufacture is made on the Lancashire coalfield at Oldham, Rochdale, Bury and Manchester. Here engineering works turning out materials for railways and buildings are numerous.

On the Northumberland-Durham coalfield railway plant construction, shipbuilding, and gun-making are the chief metallic industries. This region is the most important in England for shipbuilding, which is carried on at Middlesbrough on the Tees, Sunderland on the Wear, and at the Tyne ports, North and South Shields and Newcastle. On the Tyne is the famous ordnance factory at Elswick.

Shipbuilding is also carried on at Barrow-in-Furness and at Belfast, which obtains its iron from Scotland.

All kinds of metallic work are carried on on the Scottish coalfield, but more particularly in and around Glasgow. The shipbuilding on the Clyde, at Greenock, Port-Glasgow, Dumbarton and Glasgow, is still the most important in the world. The engineering works of Glasgow turn out railway plant of all kinds, including locomotives, machinery, and every sort of iron goods.

**Recent Developments.**—In recent years considerable changes have taken place in the metal industries. The tinplate industry, which flourishes in South Wales,

declined with its growth in the United States, but has gained new markets and recovered again. The export of iron has become relatively less important. In most of its markets the United Kingdom has to compete with the manufactures of other nations, more particularly with those of the United States, Germany, and Belgium. The chemical discoveries which made the Cleveland iron ores important also made the similar ores in Germany and eastern France available for smelting, and rendered Germany a formidable rival. But the activity in shipbuilding, naval and mercantile, the making of armour plates and ordnance, electric light and tramways, and the conversion of some metropolitan railways for electric traction, in addition to the boom in textile and other trades in the second half of the first decade of the century, all contributed to the growth of our iron industry.

The universal use of the bicycle in recent years has led in Coventry to the substitution of this manufacture for silk-ribbon weaving, which had for some years been declining. Bicycle-making is also actively carried on in most of the other iron centres, more particularly in Birmingham and Wolverhampton. Sewing-machines are made near Glasgow. Motor-car building is an industry which is flourishing in Coventry and elsewhere, and the construction of aeroplanes is beginning.

### The Chemical Industries. •

It is difficult to overestimate the importance of chemical industries in the modern industrial world. The case of the Cleveland iron ores has been mentioned above. In addition to improved processes of metal-working, many by-products of various

manufactures, which were formerly considered waste, have been utilised as raw materials by the application of proper chemical methods. Coal-tar, a by-product in the manufacture of gas, has been applied to many uses, and, among others, is made to yield an important series of aniline dyes. Dye substances were formerly either of vegetable origin, like madder and indigo; animal, like cochineal; or pulverised minerals, like hematite. Now aniline dyes are mainly employed.

Aluminium is more and more used, and is obtained from bauxite. Electricity generated by water-power is used. Works have sprung up at the Falls of Foyers and at Kinlochleven, near the Pass of Glencoe.

Salt, mined in Cheshire and Durham, is used in the chemical-works of South Lancashire and the Tyne, and as the basis of alkalies for bleaching and other purposes.

Sulphuric acid, used in many industries, is manufactured in the centres just named and around Glasgow.

Glass-making from silica (pure sand, quartz, flint), mixed with salt, soda, lime, potash, and lead, is the principal industry of St Helens in South Lancashire, and is important at Newcastle. (For potteries, see pp. 36 and 44.)

Soap is made by heating fatty substances with soda to form hard soaps, or with potash to form soft soaps. Tallow and vegetable oils—especially palm, coco-nut, and cotton-seed oils—are used. As the latter are all imported, soap-making naturally flourishes in a seaport such as Glasgow. Glycerine is a by-product of soap-making.

The manufacture of candles, paraffin, &c. from oil-shale is carried on mainly in Mid and West Lothian.

Paper is made by bleaching vegetable fibres, usually esparto grass, or wood fibre combined with cotton or linen rags. These are reduced to a fine pulp, which is rolled and dried into a continuous web of paper. In Midlothian, round Edinburgh, and in Kent and London, where most printing is done, are many printing-paper factories; but many mills exist in other parts of the country.

Tanning is a process for preserving the hides of all kinds of animals and transforming them into leather. Most of the domestic animals supply the skins, which are treated with some solution containing tannin, such as can be obtained from oak and other bark, acorns (*valonia*), cutch, gambier, &c., or compounds of chromium.

#### Industries connected with Food and Drink.

**Preserved Foods.**—In older times food for winter was preserved by drying, smoking, and salting. At the present day, when transport facilities provide a continual supply of fresh food, this is no longer so necessary; but fish and bacon are still salted and smoked to preserve them and to improve their flavour. At the fishing centres, more particularly those distant from market, drying, salting, and smoking fish is an important occupation. Herring, haddock, and cod are the chief fish preserved. Finnan (Findon) haddocks in Scotland, and Yarmouth bloaters in England, are important articles of trade.

A little home meat is preserved in tins for use at sea; but the great bulk of our tinned food is imported.

Small fruits are made into jams and jellies in London and the neighbourhood, and on fruit-farms

in other parts of the country. Orange marmalade is made in Dundee and elsewhere.

**Sugar** is refined at Greenock, and made into sweetmeats in all large cities. It is combined with cacao (commonly called cocoa) to make chocolate in Bristol, York, and other places.

**Dairy Produce**, such as butter and cheese, is made in Ayrshire, Cheshire, the Midlands, Gloucestershire, and the south-western counties of England, and in Ireland.

**Brewing and Distilling**.—The juice of apples and pears is fermented to form cider and perry in the south-west of England, especially in Hereford and Devon; but by far the most important drinks manufactured in the British Isles are beer and whisky, both derived from barley.

Beer is made by allowing the barley grains to germinate, when the starch of the grain is changed to sugar, and the grain is called malt. The sweetened liquid extracted from the malt is fermented by the yeast-plant, and flavoured with hops. Beer is chiefly brewed in the three capitals, London, Edinburgh, and Dublin, and at Burton-on-Trent, which is near the hop-fields of Worcestershire, and possesses a large and suitable water-supply. The anthracite of Wales can be easily transported to Burton, which has a world-wide celebrity for its beer. Brewing is also carried on in all our large cities. Stout, a beer impregnated with burnt sugar, is mainly brewed in London, Burton, and Dublin.

In Scotland and Ireland the malted liquor is distilled to form whisky, which is manufactured in all the large cities. In Ireland and the Highlands of Scotland a special flavour is imparted to the whisky by the smoke of burning peat.

## CHAPTER V.

## TRADE ROUTES AND CENTRES.

**Towns and Trade.**—In Roman times almost all the towns were fortified places. Many of them can be identified by their names—Chester, Worcester, Winchester, Cirencester, &c.—which are derived from *castra*, the Latin word for camp. Even at that date, however, and, indeed, from the earliest days of human habitation in our islands, certain spots, such as fords, or the junction of two valleys or rivers, presented special advantages for meeting-places, more especially between those who had commodities to exchange. As population and trade increased most of these naturally grew into towns of greater or less importance. At a later date abbeys and monasteries attracted a considerable population, composed of members of religious houses, their pupils and servants, those who resorted to them for healing and other benefits, and the artisans, craftsmen, and traders required in a growing community. Our towns, therefore, have grown up in various ways. Some, like Warwick or Chester, developed out of fortified places; others, like Oxford, out of monasteries; others again out of such centres of local trade and traffic as fords, bridges, or ports. Many of these, such as Wallingford, Cambridge, Newport, Exmouth, can be recognised by their names. A group of ancient market centres, Chipping, Chipping Norton, Chippenham, Chepstow, and others, were places where *chapmen* or merchants met to sell or barter

their wares. These owed their importance to the fact that shopkeeping was little developed in the early Middle Ages, and that trade, was chiefly carried on at such markets and at periodical fairs, held once a year or oftener, and lasting for days or weeks, like Stourbridge Fair, near Cambridge, which was known throughout Western Europe, and flourished in full vigour up to the middle of the eighteenth century.

In addition to the many towns well fitted to be busy centres of local trade, a few have always possessed special natural advantages marking them out for commercial greatness. Of such we have an excellent example in London, standing at the head of the tidal waters of the Thames. Here a ford existed in early times, replaced later by a bridge. Combining facilities for sea and land communication, and serving as an outlet for the rich south-east of England, London early became the chief commercial town of England, and replaced Winchester as the political capital. Bristol, on the Severn estuary, possessed a very similar situation; but, commanding a less rich district, and being comparatively remote from the Continent, it never became the rival of London.

The modern development of manufactures and railways has led to a corresponding development of towns. The application of steam-power to production has made the coalfields industrial centres, while its application to transport has facilitated the rise of many inland towns, especially of those at the intersection of different routes. Other things being equal, however, proximity to the sea must ever be an advantage; and the rapid growth of our foreign trade, combined with that of our manufactures, has had the most

marked effect on the prosperity of our ports and of the manufacturing towns near them. At the present day two opposite tendencies are at work. One is shown by the disposition of industry to move to the sea. This is illustrated by the removal of many important engineering firms from inland to coast towns. The second is shown by the construction of the Manchester Ship-Canal, which aims at bringing the advantages of a maritime situation, with its concomitants of cheap and convenient water-transport, to an inland centre.

**Internal Transport.**—Internal trade is carried on by road, railway, and canal, and by coasting-vessels. The country is covered by a network of railways and canals, which is closest around the great centres, London, Birmingham, Manchester, Sheffield, Leeds, Liverpool, and Newcastle.

**Roads.**—Roads are seldom employed for long-distance traffic, except where there are no other means of transport. Their chief use is to distribute goods brought by rail, canal, or sea to the nearest station or port. Carts of various kinds are generally employed for this purpose. The improvement in motors is giving rise to a new traction traffic.

**Canals.**—The plains of England readily lend themselves to the construction of canals, which cross them in every direction. Most of our canals were made between 1770 and 1830. Few new ones and few improvements have been made since railways were constructed. The utility of many is impaired by their being both too shallow and too narrow to permit barges of fair length, breadth, and depth to pass, and few facilities for loading and unloading are provided. Yet on the plains they should give cheap transportation.

The Severn is navigable for boats of 200 tons to Worcester, the Thames for boats of 120 tons to Oxford, the Trent for boats of 200 tons to Gainsborough. It has been proposed to make the Severn navigable to Stourport for 600-ton boats, and the Trent to Nottingham for 500-ton boats. The latter is one of the most important proposals, owing to new coalfields in the Trent basin.

Birmingham is the centre of one of the busiest canal systems. Only narrow boats carrying about 30 tons are used, and those mainly for local traffic. At present canals join Birmingham to the Severn and Stour. From this and from Birmingham the Shropshire Union and the Trent and Mersey Canals connect with the Mersey. The latter also links the Birmingham system with the Trent and the Humber. From Birmingham to the Thames there are two routes—(1) by Warwick and Banbury to Oxford, and (2) by Warwick, Wolverton, and Watford to Brentford. From the latter canals run (1) to Coventry and the Ashby coalfields, (2) to Leicester and by the Soar to the Trent, (3) to Northampton and the Nen. From Brentford to Leicester is the Grand Junction Canal.

It has been proposed to improve the canals from Birmingham to the four estuaries by a system of canals capable of passing barges of 100 tons. This has been termed the Cross system.

The Thames and Severn are joined (1) by the Kennet and Avon, and (2) the Stroudwater Canal; but neither is much used.

A large number of narrow canals for drainage as well as for navigation cross the Fens.

The Weaver Navigation and the Aire and Calder Canal have adopted modern improvements in their waterways, and are successful. The coal traffic on the Aire and Calder to Goole is remarkable. The South Yorkshire Canal is partly a modern canal of considerable capacity.

Three canals cross the Pennines. Two of these unite the Irwell at Manchester to the Calder: the southern one passing through Huddersfield, the northern one by Rochdale. Still farther north, the Leeds and Liverpool Canal passes through Blackburn, Burnley, and Skipton, and a branch joins Preston to Blackburn.

The Forth and Clyde are connected by canal from Grangemouth to Glasgow, with a connection to Edinburgh by the Union Canal. In Ireland the Grand and the Royal Canals join the Liffey to the Shannon. The former joins the Shannon between

Lough Ree and Lough Derg, and has a branch to the Barrow. The Ulster Canal runs along the Blackwater to Lough Neagh, whence it connects with the sea by the Bann and by another canal with the Lagan. The deep Newry Canal, three miles long, joins Newry to Carlingford Lough.

**Ship-Canals.**—There are several ship-canals which are of importance in connection with the coasting and foreign trade. Some of these are natural waterways artificially deepened. All the chief rivers are constantly dredged to allow the largest vessels to enter the docks of the great ports, and thus the Thames, the Tyne, the Bristol Avon, and the Clyde may be regarded as great ship-canals. A ship-canal joins Gloucester to the navigable part of the Severn. The great Manchester Ship-Canal, from the Mersey to Manchester, is wholly artificial.

The Manchester Ship-Canal is thirty-five and a half miles long, and unites the Mersey estuary at Eastham with Manchester, *via* Runcorn and Latchford, by a waterway twenty-six feet deep and one hundred and twenty feet wide at the bottom. The first twenty-one miles to Latchford are without locks. Between Latchford and the docks at Salford and Manchester, where there are over six miles of quays, four locks raise vessels sixty feet.

In Scotland the Crinan Canal saves a long voyage round the Mull of Kintyre to vessels going from Glasgow to the north-west; and the Caledonian Canal, through Glenmore, allows vessels of moderate draught to pass from Loch Linnhe to the Moray Firth, and avoid the stormy voyage across the Pentland Firth.

**Railways.**—On the plains railways compete with canals for the transport of commodities, while in the more mountainous districts they are practically the only means of carrying on trade.

London, the capital as well as the chief port and

market, is naturally the centre of the railway system of the country. From this centre important lines radiate in all directions, like the spokes of a great wheel. The terminal points are either ports or great industrial towns, which, in their turn, are the centres of minor systems of radiating lines, connecting them with each other. The country is thus covered with a network of lines too complex to describe in detail, by which every town of any size is connected with the Metropolis, ports, and industrial centres, frequently by several alternative routes. This network is most closely interwoven on the plains, while in the mountainous districts all the great valleys form railway routes, except in the outlying and thinly peopled districts of Wales and Scotland, which are of little commercial importance. The effect of this keen competition is to facilitate transport and to reduce rates.

In 1850 there were less than seven thousand miles of railways in the United Kingdom. During the next twenty years the mileage was more than doubled. At the end of 1908 the total length of railways was over twenty-three thousand miles, of which sixteen thousand miles were in England and Wales, over three thousand eight hundred miles in Scotland, and rather less in Ireland.

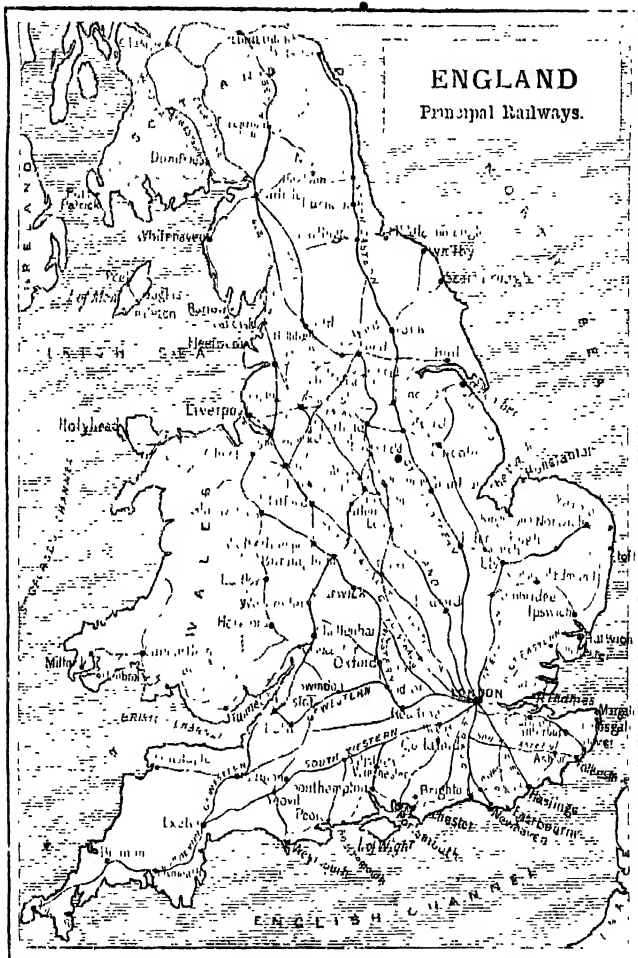
From a commercial point of view a detailed knowledge of the great main lines is of less importance than a clear understanding of the facilities of transport between the various industrial towns and districts and the ports or other centres from which they obtain raw materials, or to which they distribute finished products. For convenience of reference, however, the customary grouping by main lines—a system based rather on

passenger than commercial traffic—is followed; but it should be remembered that this simpler classification tends to disguise the complexity of the railway systems from a commercial point of view.

**Main Lines connecting London with the Western and Southern Counties.**—The Great Western (G.W.R.), with the longest mileage in the United Kingdom, connects London with Birkenhead through the manufacturing centres of the Midland coalfield, and with Exeter and the southern counties. The London and South-Western (L.S.W.R.) competes with the G.W.R. for the Exeter traffic, and carries a considerable proportion of the French and Continental traffic by way of Southampton. The traffic of the south-eastern counties—with much for France—is divided among the London, Brighton, and South Coast (L.B.S.C.R.), running to Portsmouth and Newhaven; and the South-Eastern and Chatham (S.E. & C.R.), running to Dover, and connecting with Holland through Queenborough. The eastern counties traffic—with much for the Continent by way of Holland and Belgium—is carried by the Great Eastern (G.E.R.).

The G.W.R. has five main routes from London (Paddington): (a) Reading, Newbury, Westbury (Weymouth branch for Channel Islands) to Exeter and Cornwall; (b) Reading, Swindon, Bath, and Bristol to Exeter; (c) Reading, Swindon, and the Severn Tunnel to South Wales, and Fishguard (for Ireland, and Atlantic liners); (d) Didcot, Oxford to Worcester and Kidderminster or Hereford; (e) Wycombe, Leamington, Birmingham, Shrewsbury, and Chester to Birkenhead. There are also cross-country lines, Shrewsbury to Hereford and Cardiff; Bristol to Cheltenham and Birmingham, &c.

The L.S.W.R. runs from London (Waterloo) through Woking (branch to Portsmouth), Basingstoke (branch to Winchester and Southampton), Salisbury (branch to Weymouth), and Yeovil Junction to Exeter, whence it is continued to Plymouth.



The L.B.S.C.R. runs from London (Victoria and London Bridge) through Oxted to Eastbourne, through Lewes to Newhaven, through Redhill to Brighton, through Chichester to Portsmouth; and a line follows the south coast from Hastings to Portsmouth.

The S.E. & C.R. (Chatham division) runs from London (Victoria, Holborn Viaduct, and St Paul's) through Gravesend, Rochester, Chatham, Sittingbourne (for Sheerness and Queenborough), Faversham (for Margate and Ramsgate), and Canterbury to Dover.

The S.E. & C.R. (S.E. division) runs from London (Charing Cross and London Bridge) through Tunbridge (branch to Hastings), Ashford (branch through Canterbury to Ramsgate and Margate), and Folkestone to Dover.

The G.E.R. runs from London (Liverpool Street) through Colchester, Manningtree Junction (branch to Harwich), Ipswich (branch to Norwich), Beccles Junction (branch to Lowestoft), to Great Yarmouth. Another line runs from London through Cambridge, Ely (branch through Lynn to Hunstanton, and another to Norwich), March (branch to Peterborough), and Lincoln to Doncaster, connecting there with the G.N.R. and the N.E.R.

**Main Lines connecting London with the Midlands and North of England.**—The traffic of the midland and northern counties is carried from London by the Great Northern (G.N.R.), continued by the North-Eastern (N.E.R.)—opening up the Yorkshire and Northumberland and Durham coalfields—to Berwick, the east coast centre for the Scottish traffic; and by the London and North-Western (L.N.W.R.)—connecting the capital with the great industrial district of South Lancashire—or the Midland (M.R.)—connecting it with the Midland and Yorkshire industrial towns—to Carlisle, the west coast centre.

The Great Central (C.C.R.), formerly the Manchester, Sheffield, and Lincoln, also connects the capital with the manufacturing towns of the Lancashire and Yorkshire coalfields. The Lancashire and Yorkshire

(L. & Y.R.) serves south Lancashire and Yorkshire, but is not directly connected with the Metropolis.

The G.N.R. runs from London (King's Cross) through Peterborough and Retford to Doncaster, whence it is continued by the N.E.R.—radiating over the north-eastern counties—through York, Darlington, Durham, and Newcastle to Berwick.

The L.N.W.R. runs from London (Euston) through Rugby (branches to Peterborough and Birmingham), Stafford (branch to Birmingham), Crewe, Wigan, Preston, and Lancaster, to Carlisle. From Crewe, branches run (a) by Chester and the Menai Bridge to Holyhead (for the North Wales and Irish traffic); (b) through Stockport and Huddersfield to Leeds; (c) through Stockport to Manchester; (d) to Liverpool over Runcorn Bridge. From Liverpool a line runs to Leeds *via* Manchester.

The M.R. runs from London (St Pancras) through Bedford, Leicester (branches to Peterborough and Rugby), Trent Junction (branch to Derby, and branch to Nottingham and Lincoln), Chesterfield, Sheffield, Leeds, and Settle (branch to Heysham) to Carlisle. Branches run (a) from Trent through Derby and Ambergate to Manchester and Liverpool, (b) from Bristol through Gloucester, Cheltenham, Birmingham, Burton, Derby, and Ambergate, connecting with the Carlisle line at Chesterfield.

Both the M.R. and L.N.W.R. pass through Carnforth to Barrow and West Cumberland over the Furness Railway.

The G.C.R. runs from London (Marylebone) through High Wycombe or Aylesbury, Rugby, Leicester, Nottingham, and Sheffield (branches to Lincoln and Grimsby) to Manchester (centre of the Cheshire lines) and Liverpool.

The L. & Y.R. main line runs from Liverpool by Wigan to Manchester, and by Wigan, Bolton, Rochdale, and Halifax to Bradford and Leeds. It serves all the towns of South Lancashire, connects with the M.R. at Normanton and Hellifield, and the L.N.W.R. at Preston, whence both lines run to Fleetwood.

The North Staffordshire serves the region it is named after, and runs through Stoke, from Crewe to Derby, and from Macclesfield to Stafford.

**Scottish, Welsh, and Irish Railways.**—The Scottish lines radiate from Edinburgh and Glasgow, but it is

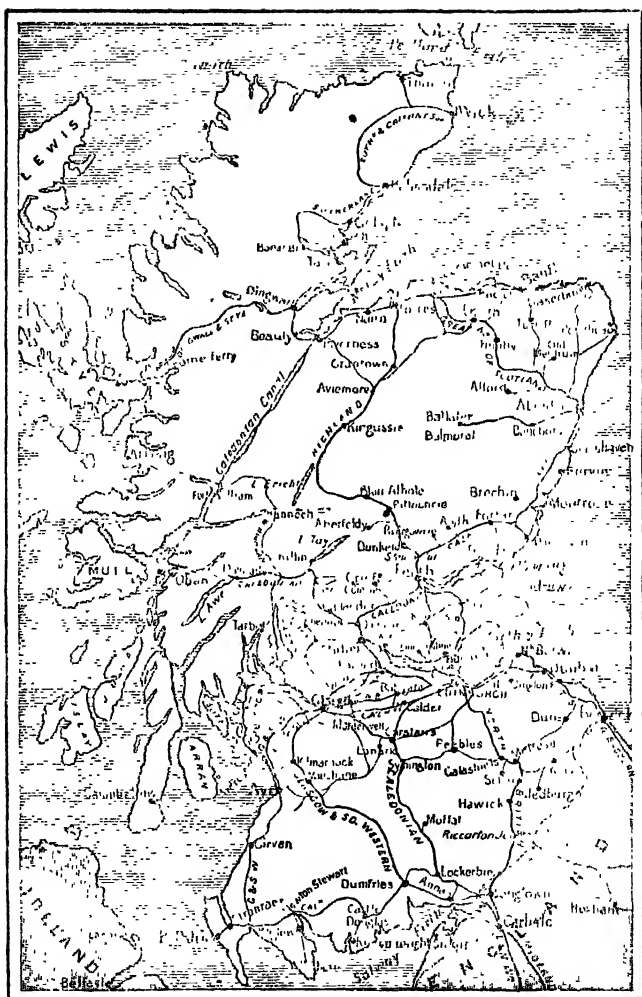
convenient to trace them from Carlisle and Berwick, where they connect with the great English lines.

The three regular through passenger routes from London to Scotland are: (1) the East Coast Route by the G.N.R. and N.E.R. to Berwick, and thence by the eastern branch of the North British (N.B.R.), through Dunbar to Edinburgh and Glasgow; (2) the West Coast Route, by the L.N.W.R. to Carlisle, and thence by the Caledonian (C.R.) to Edinburgh, Perth, or Glasgow; and (3) the Midland Route, by the M.R. to Carlisle, and thence by the Western or Waverley branch of the N.B.R. to Edinburgh, or by the Glasgow and South-Western (G. & S.W.R.) to Glasgow.

Both the C.R. and N.B.R. main lines run to Aberdeen, where a connection is made with the Great North of Scotland (G.N.S.R.) for the north-eastern counties. Perth, reached by both lines, is the starting-point for the Highland Railway (H.R.), which opens up the Highlands and the northern counties; while Glasgow is the centre for the West Highland traffic, which is sent over the West Highland line by Loch Lomond and the desolate Moor of Rannoch to Fort William.

The C.R. connects with the English railways at Carlisle, and runs through Lockerbie, Carstairs (branch to Edinburgh on the east), Motherwell (branch to Glasgow on the west), Stirling, Dunblane (branch through Callander to Oban), Perth, and Forfar to Aberdeen.

The N.B.R. connects with the English railways both at Carlisle and Berwick. From Carlisle the western branch runs through Hawick and Galashiels (Tweed woollen district) to Edinburgh, outside which city it is joined by the eastern branch from Berwick. Glasgow is reached through Edinburgh either by Falkirk or by Bathgate and Airdrie. From Edinburgh the main line runs to



SCOTLAND—Principal Railways.

Dalmeny, and over the Forth and Tay Bridges to Dundee, Arbroath, Montrose, and Aberdeen. From Glasgow the West Highland line runs to Fort Augustus, Fort William, and Mallaig.

The G. & S.W.R. runs from Carlisle through Dumfries (branch to Stranraer) to Glasgow; and from Glasgow by Ayr to Stranraer.

The H.R. starts from Perth and follows a picturesque route along the glens and over the passes of the Highlands, through Dunkeld, Blair Athol, Aviemore (branch to Forres, Nairn, and Elgin), Inverness, Dingwall (branch to Strone Ferry), and Tain, to Wick and Thurso.

The G.N.S.R. runs from Aberdeen to Elgin, with branches to Banff, Peterhead, and Fraserburgh.

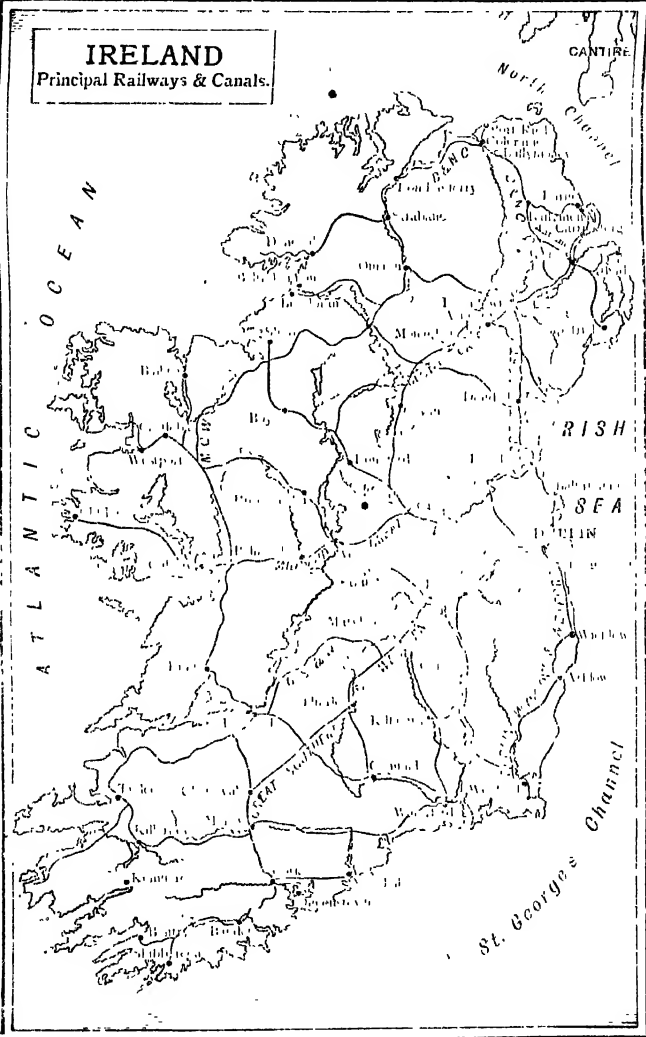
The Welsh traffic is chiefly carried on by the G.W.R. in the south and the L.N.W.R. in the north, both with numerous branches. The Cambrian has a considerable mileage in the centre. In South Wales numerous parallel lines running more or less north and south, sometimes in the valleys, but generally along the heights, connect the collieries with the coast.

In Ireland the railways radiate from Dublin. The Dublin, Wicklow, and Wexford Railway serves the counties named. The Great Southern and Western Railway runs to Cork and Limerick by Kildare and Charleville, with branches to Kilkenny and Athlone. The Midland Great Western crosses the island to Galway, Clifden, Westport, and Sligo. The Great Northern (Ireland) unites Dublin to Belfast and Londonderry through Drogheda and Dundalk, and the Northern Counties Railway joins Belfast and Londonderry through Antrim, and also runs to Larne.

**Chief Trading Centres.**—The internal trade of the British Isles is greater at the present day than at any other period. It is also greater than that of any other country. Each mining or manufacturing centre has

# IRELAND

Principal Railways & Canals.



its great trading town, where most of the business of buying and selling is carried on. Birmingham in the Black Country, Sheffield in the South Yorkshire iron district, Leeds in the woollen district, Manchester in the cotton district, Newcastle-on-Tyne in the northern coal and iron district, are the great commercial centres of industrial England. With the exception of Newcastle, these are all practically connected by a series of smaller towns. Cardiff is the commercial centre of South Wales. In Scotland, Glasgow, and in Ireland, Belfast and Dublin have become commercial capitals.

**London.**—London is a great central market, receiving commodities from all parts of the country and from abroad, and redistributing them both to home and foreign markets. Imported agricultural and food products of all kinds, such as tea, coffee, sugar, groceries, as well as all kinds of fancy goods and luxuries, are sent from it to other towns. In the same way coal, chiefly from the Midland coalfield, manufactured goods, jewellery, and hardware from Birmingham, cutlery from Sheffield, woollen goods from Yorkshire, and cotton goods from Lancashire, all pass through the wholesale London warehouses. Dairy, farm, and garden produce are brought from the country and the Continent to supply its great markets and feed its seven million inhabitants. Special fish and meat trains arrive during the night at the great London stations, loaded with food supplies, which are sold the next morning. The city and suburban traffic is carried on by the main lines of which it is the centre, and by two local lines, chiefly underground—the District and the Metropolitan.

The chief London markets are Billingsgate for fish; Smithfield

and Leadenhall for meat, game, and poultry ; Covent Garden and Smithfield for fruit and vegetables. There is a Metropolitan market for home cattle, and a Deptford market for foreign cattle.

**Staffordshire.**—Birmingham manufactures large quantities of jewellery, and is the centre of a district which produces hardware of every description. These wares are sent to London—whence they are largely redistributed to the great northern industrial towns—and to Gloucester, Liverpool, and Hull for shipment abroad. Like London and all large manufacturing centres, it obtains its food-supplies from home and foreign sources, receiving daily supplies of the more perishable, for the quick transport and delivery of which special arrangements are made by the railway companies.

The Staffordshire potteries and the Burton breweries distribute their goods in the same way.

**South Lancashire.**—Cotton goods, the staple of South Lancashire, are consigned from the surrounding districts to Manchester, whence they are distributed to Liverpool, Hull, and other ports for shipment, and to all parts of the country for home consumption. The raw materials enter mainly by Liverpool or by the Manchester Ship-Canal ; and large quantities of food from foreign and colonial sources are consigned to Manchester by these routes.

Salt from the Cheshire mines and chemicals from South Lancashire are distributed to both the Lancashire and the Yorkshire manufacturing districts, as well as to other home and foreign centres.

**West Riding of Yorkshire.**—Leeds and Bradford serve as the emporia for the West Riding woollen centres, whose wares they distribute partly by rail and partly by sea, through the ports of Goole, Hull, and Liverpool.

Cutlery and armour-plates from Sheffield are distributed in the same way.

From Northumberland and Durham the North-Eastern Railway carries coal, iron goods, and chemicals to all the surrounding districts, and to Newcastle, Sunderland, Middlesbrough, and other ports.

The railways in the Lowlands of Scotland carry much coal to the ports for foreign trade in addition to distributing it to the inland parts of the country. The North British Railway distributes the woollen goods of the Tweed valley, and shares all the varied trade of the Glasgow district with the Caledonian Railway and the Glasgow and South-Western Railway.

**Ports.**—London is the port nearest the heart of the south-eastern region of England, and is opposite the great Continental ports, more particularly those at the mouth of the Rhine, with which a constantly active trade is carried on, not only from London, but from other ports on the east and south-east coast of England. The Continental packet stations, outports of London, are Harwich, Dover, Folkestone, Newhaven, Southampton, and Weymouth. Southampton has grown in recent years to be the port for great liners to the East and to Africa, and for London passengers to America. The western ports sprang into importance after the doubling of the Cape of Good Hope and the discovery of America. Bristol and Plymouth were the most important of these until the application of steam-power to industry and the rise of great manufacturing centres round the South Wales, Midland, Lancashire and Yorkshire coalfields raised Liverpool, in the west, and Hull, in the east, to the rank of first-class ports. Cardiff, Newport, and Swansea have grown with

the development of mining and metal-working on the South Wales coalfield. From early times Newcastle shipped coal to London; but the other Northumberland and Durham ports, North Shields, Tynemouth, Sunderland, together with Middlesbrough, in Yorkshire, have become important only in recent years with the development of coal and iron industries and the manufacture of chemicals. Silloth is the port for this region in the west, and south of it Maryport, Workington, and Whitehaven are outlets for the Cumberland coalfields.

In Scotland, as in England, the east coast ports were long the most important, and trade was carried on, more particularly with France, through Leith. Now Leith, Grangemouth, Burntisland, and Dundee still carry on an extensive coasting and Continental trade; while the Clyde has become the busiest commercial centre in Scotland. Greenock, Glasgow, and Ardrossan are the chief ports. Aberdeen sends out granite and manufactured goods.

The great ports of Ireland, such as Belfast, Dublin, Waterford, and Cork, are all in the east or in the south, nearest Britain and the Continent, and serve as outlets for the agricultural products and salmon of Ireland, and as inlets for manufactured goods from Great Britain. The east coast is not only nearest the richest land of Ireland, but is opposite Great Britain. The west coast of Ireland has numerous natural harbours; but a natural harbour alone does not suffice to make a port, which must have easy communication with land producing commodities for which there is a demand. The west of Ireland is chiefly pastoral, and is unable to support more than a coasting trade. Limerick,

which forms the outlet for the Golden Vale, is by far the most important port on the west coast.

The routes between Great Britain and Ireland are numerous. Scotland sends goods and passengers from Glasgow and Greenock to Londonderry, Belfast, and Dublin; and swift boats run daily between Ardrossan and Belfast, and between Stranraer and Larne, the latter the shortest sea-route between the two islands. The north of England ports, Barrow, Fleetwood, and Liverpool, do a large cross-Channel trade with Belfast, and also trade with the Isle of Man. Liverpool is also directly connected with Drogheda, Dublin, Cork, and other ports. The quickest service from London to Dublin is by the mail route *via* Holyhead to Kingstown or Dublin direct. Steamers also sail from Holyhead to Greenore for Belfast. Both New Milford and Bristol are in regular communication with Waterford and Cork.

All the ports of the British Isles have regular steam communication with each other every few days.

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## CHAPTER VI.

### OUR FOOD-SUPPLY.

IN olden times our country was dependent on its own products for the food of its inhabitants, who were forced to subsist on what could be grown in their own immediate neighbourhood. In bad years considerable distress was therefore felt, while actual famines were not unknown. The choice of food was also more limited than at present, and some districts offered less variety than others.

In the Tweed valley servants formerly stipulated for a clause in their contracts forbidding salmon to be served more than three times a week. Nowadays few masters feed their servants on salmon even three times a year. It is no longer the commonest

fare either in Tweeddale or elsewhere, but is a luxury within the reach only of the well-to-do. Its value has increased even in regions where it is abundant, while the value of other foods has fallen. No doubt salmon have become scarcer, but the change in relative value is in large part due to the development of transport facilities, which permit salmon to be forwarded to distant markets, and other kinds of food to be cheaply brought from other parts.

This increase in transport facilities is part of a general economic change which has come over this country during the last century and a half, transforming Great Britain into a great manufacturing country. The increased power of production resulting from the use of steam-power has led to an enormously rapid increase of population, especially in the non-agricultural section of the community. The home food-supply has not kept pace with this increase of population, and the bulk of our food now comes from the uttermost parts of the earth in great steamers which occupy only a few weeks on the voyage. About £250,000,000 are spent annually on imported food.

Food products, using the term in the widest sense, may be divided into cereals, fish, flesh, dairy produce, fruits and drinks. The cereal most in demand is wheat. It is long since the wheat-lands of Britain ceased to supply enough wheat for the people of the United Kingdom, and since the removal of the heavy duties once levied on foreign wheat the import of this cereal has gone up by leaps and bounds. At the end of the nineteenth century it was more than double the quantity imported thirty years previously.

The latter half of the nineteenth century has been marked by the colonisation and cultivation of many lands formerly occupied by wandering hunters or

herdsmen. The extension of the wheat-growing area has enormously increased the world's food-supply, and has created a surplus which is sent mainly to Europe, and very largely to the United Kingdom. The most important of these new wheat-lands are the North American prairies, west of the Alleghenies and the Great Lakes. In Europe, the *puszta*s of Hungary, the Wallachian plain, and the rich black lands of southern Russia are the great wheat-producing regions. All these regions are relatively sparsely peopled, and in some—for example, in Russia—rye and not wheat is the cereal consumed by the inhabitants themselves. There is consequently a large surplus for export to western Europe. In India excellent wheat is grown in the north-western regions under irrigation. The Plate basin in South America is another source of our wheat-supply and its resources are as yet by no means fully developed. Australia sends irregular supplies—e.g. £1500,000 in 1902, £10 in 1903, £4,700,000 in 1909. In addition to these there are two vast areas which are gradually being developed, and will be made to produce enormous supplies of wheat. These are the plains of western Canada and southern Siberia. Until these virgin lands are more or less exhausted, there will be a natural increase in the world's wheat-supply; but in a few decades a more careful and intensive cultivation of the wheat regions will be essential, as most of the available free land will doubtless in that time be fully utilised, even in the higher lands of Africa.

American wheat is sent east to the Atlantic ports, more particularly to New York, Boston, Montreal, and Quebec, by the great railways of the United States and Canada, and the Great Lakes and the canals which connect them either with the

Hudson or the St. Lawrence. Much United States wheat is exported in the form of flour, ground largely at Minneapolis, on the Mississippi, at the foot of the great St. Anthony Falls, which supply water-power for turning the numerous flour-mills. The finest flour is imported into this country from Hungary, and it is remarkable that this is superior to that ground in this country from Hungarian wheat. Hungarian wheat is exported partly from the port of Fiume on the Adriatic, but most of the Danube valley crop finds its way down the river to Braila and Galatz, near its mouth, where it is shipped westwards. Russian wheat is brought across the plain to Odessa, to Kherson at the mouth of the Dnieper, and to Taganrog at the mouth of the Don. Wheat is also shipped from the Baltic ports. Indian wheat is shipped mainly from Karachi; Australian from Sydney, Melbourne, and Adelaide; South American from the Plate River.

From 20 to 36 per cent. of our imported wheat and flour comes from the United States, over one-third of it as flour: 18 to 30 per cent. from Argentina; 5 to 16 per cent. from Russia; and 16 to 17 per cent. from Canada, the most important of our colonial sources of wheat, and the source most rapidly expanding.

Maize, the cereal next in importance, is imported more as a feeding substance for our live-stock than for human food, though much is turned into corn-flour at Paisley and elsewhere. The chief source until recent years was the central Mississippi basin, but Argentina now sends half our supplies. Maize is also imported from Romania and Russia.

The other cereals, more particularly barley, oats,\* and rye, and the pulses—peas and beans—are also largely imported. Barley is chiefly used for brewing and distilling, and is imported mainly from Russia, the Danube provinces, Asiatic Turkey, and the United

\* Oats come from the United States, Russia, and Canada, rye and peas from the United States and Canada, and beans from Asiatic Turkey and Egypt.

**States.** The other substances named are employed more for feeding stock than for human food.

**Rice,** the only other important cereal, is brought from Burma through Rangoon, and from Bengal.

**Dairy Produce and Eggs.**—Butter and margarine, cheese, eggs, and milk are important articles of food which our dairies and poultry-farms do not supply in sufficient quantity.

Forty-five per cent. of imported butter comes from Denmark. Sweden, Holland, and northern France send supplies, which can be delivered in our markets before they have time to deteriorate in quality. In recent years refrigerating processes have enabled dairy produce to be brought fresh from the farthest regions, and Russian, New Zealand, Australian, American, and Canadian butter is now a common article in the English market. Cheese comes principally from Canada, where careful technical education has made the farmers of Ontario the most skillful cheese-makers in the world. Cheese is also imported from the Northern United States, Holland, Belgium, Switzerland, France, and New Zealand. From £2,400,000 to £3,000,000 worth of eggs are annually obtained from Russia, and over £1,800,000 from Denmark; Germany, France, Italy, and Austria also send large supplies. Considerable numbers come from Canada. Condensed milk is imported from Switzerland and Norway.

**Fish.**—The home supply of fish is very large, and more is exported than imported. Fresh herrings are brought from Scandinavia, other kinds of fresh fish from Norway and Holland, and oysters from the United States and France. Frozen salmon from Canada is becoming common in the markets of London and the

larger ports, and canned salmon, lobsters, and oysters are imported in large quantities from Canada and the United States. Sardines, preserved in oil, are imported from French and Portuguese fisheries, and anchovies, in oil or brine, are obtained from Italy and Norway. Both are luxuries rather than staple articles of food.

**Flesh.**—Meat is imported partly in the form of live animals, partly as dead carcasses, partly as salted or preserved meat. Live cattle are sent mainly from the United States and Canada, through New York, Boston, Montreal, and Quebec. From Argentina, the United States, Australia, and New Zealand large quantities of dead meat are brought over in ships fitted with refrigerating chambers. Sheep are imported from the Argentine Republic, the United States, Canada, and even from Iceland. Frozen mutton is brought from the Argentine Republic, New Zealand, and also from Australia. Fresh mutton is imported in considerable quantities from Holland. Fresh pork is imported from Holland and the United States. Bacon and ham come mainly from the United States and Denmark; a little from Canada. Beef and pork, salted or preserved in other ways, come mainly from the United States. Corned mutton is brought principally from New Zealand and Australia. Meat extracts are imported from Uruguay and Argentina.

**Poultry and Game** are brought from various parts of the Continent; dead rabbits from Belgium and from Australia. In the latter country they have long been a pest; but they are now killed for their flesh, part of which is canned, and for their skins.

**Fruits.**—In recent years, since refrigeration has rendered it possible to bring even the more delicate

fruits from distant parts of the world without deterioration, fruit has become a much more important article of diet in this country. Of temperate fruits the apple is the most important. The home supply is quite inadequate, and several million bushels are imported annually, chiefly from the United States, Canada, and Normandy, though the supply from Tasmania is increasing. Subtropical fruits are obtained from the Mediterranean countries. The most important are oranges, lemons, figs, grapes—either fresh or dried into raisins and currants—olives, almonds, and dates—the last from the borders and oases of the desert. Of tropical fruits the banana is most in demand. It is imported in immense quantities from the Canary Islands, the West Indies, and other countries lying between the tropics. The more expensive pine-apple comes from the same sources. The coco-nut is brought from various intertropical regions, but chiefly from the islands of the Pacific and Indian Oceans.

A large trade is done in fruits preserved in bottles and cans. Apricots, pears, and other fruits are bottled in France, and are finer in quality and higher in price than the many canned fruits imported from the Southern United States, California, the East Indies, and Australia. In addition to dried currants and raisins, dried prunes, plums, and Normandy pippins have long been in use, and dried pears and apricots have been put on the market within the last few years.

**Sugar.**—Sugar not only forms part of our daily food, but is also the medium in which most fruits are preserved. It is found in every plant, and most fruits are rich in it. Several plants, such as the sugar-cane, sugar-beet, sugar-maple, and sorghum, are cultivated

for the sugar they yield. The sugar-cane grows only in warm, moist regions, and is cultivated in every part of them. It was formerly the staple product of the West Indies, where it is still largely cultivated, as well as in adjacent lands like British Guiana. It is also grown in the East Indies and Queensland. Our chief supplies of cane sugar come from these countries (excluding Queensland). The West Indian sugar trade has suffered during the last century from the competition of beet sugar. The Napoleonic wars at the commencement of the nineteenth century deprived the continental European countries of West Indian sugar, and obliged them to depend on that obtained from the sugar-beet, which could be grown in Europe. This led to a great increase in the cultivation of this plant in the north of France and Germany, in Belgium, Bohemia, Austria-Hungary, and parts of southern Russia. The sugar-beet is beginning to be grown in this country, for the climate is suitable, but beet sugar (principally from Germany, France, and the Low Countries) forms about two-thirds of our imported raw sugar.

**Spices, Flavourings, &c.**—In former times, when salted and dried foods were so largely consumed in winter, spices were relatively a much more important article of diet than now, though they are still largely used. From the East Indies, one of the chief spice-lands, come the nutmeg kernel and its covering layer the mace, the dried pepper-berry, the ginger-root, and the mustard-seed. Ginger is obtained from the East and West Indies, and mustard from Asia Minor. The bark of the cinnamon-tree is imported from Ceylon. Zanzibar exports the dried buds of the clove, and Jamaica the pimento or allspice. Vanilla, used for flavouring, is produced

by an orchid growing in India, Central America, and Mexico. Almond-oil is extracted from almond seeds. The only oil extensively used as a food is olive-oil from the olive drupe, the finest qualities coming from the south of France and Italy.

**Ice.**—Nearly half a million tons of ice are imported annually, chiefly from Scandinavia, for preserving and cooling food in summer.

**Stimulants and Narcotics.**—Stimulants may be divided into aromatic drinks prepared by infusion and those obtained by fermentation. The former owe their stimulating property to the presence of alkaloids, the latter to that of alcohol.

**Tea.**—In the British Isles tea is the most important non-alcoholic beverage. It is made by infusing the dried leaves of the tea-plant, which grows well in regions with very warm and moist summers where the slope of the land is sufficient to ensure good drainage. Formerly nearly all our tea used to be imported from China; but in recent years the hills of Assam, Darjiling, and other mountainous parts of India, and the mountains of Ceylon, have supplied the greater portion of the tea used in this country. China tea was shipped from Hankou and the Yang-tse-kiang ports, and from Shanghai and Canton. India tea is shipped mainly from Calcutta, and Ceylon tea from Colombo. Tea is now grown in Natal, Java, and other regions with suitable climates, and might well be introduced into northern Queensland.

The consumption of tea is rapidly increasing in this country: 160,000,000 lb. were consumed in 1880, while in 1913, 305,490,000 lb. were imported for home consumption.

**Coffee** is an infusion of the roasted and ground berry of the coffee-plant, which, like cotton, but unlike tea, cannot stand any frost. Most of our coffee comes from the Pacific slope of Central America, British India, Colombia, Brazil, and the West Indies. Brazil and the Dutch East Indies, especially Java, are among the chief coffee-producing regions. Indian coffee comes from the south of that country; very little is now obtained from Ceylon. Coffee has also been introduced into British Central Africa, where a 'bean' of very fine quality is grown.

The consumption of coffee in the British Isles is diminishing, but 800,000 cwt. are imported every year, of which about two-thirds is re-exported.

**Cacao.**—Cacao, commonly, but wrongly, called cocoa, is made from the 'nibs' or seeds of the cacao-tree, a plant of American origin which flourishes in Mexico, Central America, the north of South America, and the West Indies, and has recently been successfully introduced into Ceylon. The cacao of Ecuador is shipped from Guayaquil; that of Venezuela from La Guaira; that of Trinidad from Port of Spain. It is also exported from Brazil, Costa Rica, Nicaragua, Salvador, and Guatemala. The consumption of cacao is increasing.

The **kola nut**, from West Africa, yields one of the strongest of all non-alcoholic stimulants. It is used medicinally, and is rapidly passing into common use.

**Fermented Drinks.**—The alcoholic drinks fermented from barley have already been described (see page 61).

**Wine**, the fermented juice of the grape, is by far the most important alcoholic drink which is imported. Although the vine can be grown in the south of England and Wales, it is at present of no economic

importance, and wine is obtained chiefly from the vine-growing regions of France, more particularly from the south, where Cette is the chief wine-port. Clarets are exported from Bordeaux, and Burgundies from the Saône valley. Wine is also imported from Spain (sherry), Portugal (port), Italy, Germany (Rhine wines), and Hungary. Algeria, in the north of Africa, and the Cape, in the south, both export wine. In recent years considerable attention has been paid to vine-growing and wine fermentation in Australia, more particularly in Victoria and South Australia. Californian wines are also now in the British market. The distilled liquor obtained from wine is brandy. The best brandies are made at Cognac, in the west of France, and in the Champagne region.

A portion of the spirits imported into this country is distilled in Germany from the fermented juice of the potato. Rum comes from the British West Indies and British Guiana. Fine liqueurs are prepared by the Benedictine monks in Picardy, and those of Chartreuse in Savoy. Among many others too numerous to mention may be noticed Kirsch, distilled from the cherry, and Curaçoa, made in Holland from the outer rind of the Curaçao orange. Practically, every plant can be made to yield alcohol, and numerous fruits and plants are used for the purpose.

**Tobacco and Snuff** are made from the prepared leaves of the tobacco-plant, a native of America. The tobacco-leaf is rolled into cigars or cheroots, and in this form it is brought from Havana in Cuba, Manila in the Philippines, and from Mexico, Borneo, Burma, and southern India. Tobacco for smoking and snuffing is imported from the United States, several countries of

Europe, and the Levant. Much is imported in the form of dried leaves, which are manufactured into pipe tobacco, cigars, cigarettes, and snuff in our own country.

## CHAPTER VII.

### IMPORTS OF RAW MATERIALS AND MANUFACTURED ARTICLES.

**Raw Materials for Textile Manufacture.**—Wool and flax are the only two fibres of textile importance grown in the British Isles, but the home supply of both is quite inadequate. Cotton, hemp, jute, and other vegetable fibres, and silk, camels' hair, and other animal fibres, are all of foreign origin.

**Wool.**—Most of our imported wool comes from the southern hemisphere, where the merino sheep has been introduced. The chief wool-producing regions are Argentina, South Africa, Australia (south of 20° S. lat.), and New Zealand. Argentina exports little wool used in this country, which is chiefly supplied from Australasia and South Africa. The Australian grass-lands are the drier downs south of the twentieth parallel. The wool, which is washed on the sheep-runs before being forwarded to the coast, is exported from the chief ports of the five colonies. In New Zealand the Canterbury plains in the Middle Island are exceptionally suited for sheep-rearing, although sheep are very numerous on the drier parts of the western mountains. In South Africa the dry Karroos supply scanty pasture. Cape Colony wool, however, is less in demand than Australian, largely

because it is exported uncleaned. Its heavier weight in this condition increases the cost of transport, and consequently its price, while the manufacturer has also to pay the cost of cleaning. This is true to an even greater extent of South American wools.

There are numerous minor regions of wool-supply. For instance, sheep-rearing is almost the only industry of the Falkland Islanders.

The hair of the goat is also used for making woollen goods, especially that of the Kashmir goat and the Angora goat of Asia Minor. The latter has been successfully introduced into South Africa, and its fine hair, known as mohair, is a valuable export from our colonies there. The hair of the camel and of the alpaca of the Andes is also used in the woollen manufacture.

800,000,000 to 900,000,000 lb. of wool are imported on an average every year, of which less than half is re-exported. The home production is usually between 120,000,000 and 140,000,000 lb. The total amount of raw wool annually manufactured in the United Kingdom is over 600,000,000 lb.

**Flax.**—In addition to the flax grown in Ulster, lint fibre is imported, mainly from the Baltic, and especially from Russian ports. The finest flax, however, is produced in the south of Belgium, which sends one-fifth of our imports. We are also supplied from Holland. A considerable quantity of flax is produced in southern Russia, in northern Italy, and in western France, but is not brought to Britain. Nearly 100,000 tons are annually imported.

**Cotton.**—Two-fifths of the world's raw cotton is sent to be manufactured in the British Isles. Cotton consists of the fine hairs growing round the fruit of the cotton shrub, or tree, which is found everywhere

between the tropics, and also in subtropical regions. The hair is separated from the seeds by the process called ginning, and the 'cotton wool' is then packed into bales weighing about 440 lb. each. In the sixties about 12,000,000 cwt. of raw cotton were imported every year; but the quantity is now about 20,000,000 cwt., of which over 12 per cent. is re-exported.

The United States of America are by far the most important source of our cotton-supply. for three-quarters of the raw cotton of the world is grown there. The cotton-plant cannot flourish in regions where frost occurs, and while it does not require exceptionally great moisture, it needs long, warm summers to ripen the seeds. The south-eastern United States have a climate admirably suited for its growth, and in the sandy soils of Georgia and South Carolina plants producing the finest and longest fibres are raised. This is known as sea-island cotton, which has been introduced from this region into Egypt, Queensland, and different islands in the Pacific. The American ports chiefly engaged in shipping sea-island cotton are Charleston, Savannah, and Wilmington. A cotton with a shorter staple, known as upland cotton, is grown farther inland. This is largely shipped from the Gulf ports, such as Galveston, New Orleans, Pensacola, and Mobile.

The delta of the Nile, with its very dry air and abundant moisture derived from the river, is well suited for the growth of fine cotton; and Cyprus and other parts of the Mediterranean are equally good cotton lands. Much cotton is shipped to this country from Alexandria and Smyrna.

The black soil of the Deccan in India to the east of the Western Ghâts, where the summer rains are not excessive, yields rich crops, which are shipped chiefly from Bombay. Of the minor cotton-growing regions, Brazil is the most important. It ships its cotton from Rio de Janeiro and Pernambuco. Attempts are being made to increase the growth of cotton in British lands, especially in Africa, from which in time a large supply may be expected.

**Silk.**—Over 1,000,000 lb., about £750,000 worth, of raw silk is imported into the United Kingdom every year; £500,000 worth of husks and waste, and over £500,000 worth of thrown silk are also imported annually. Silk is obtained from the cocoon of the silkworm, which feeds on the leaves of the mulberry, oak, and other trees of China, Japan, the Mediterranean region, and other parts of the world. Most of our supply comes from France, China, and India.

**Jute.**—Jute is the coarse fibre obtained from the jute-plant, which grows only in the rich alluvial soils of warm, moist regions. The bulk of our supply, about 350,000 tons per annum, is grown in the delta of the Ganges. It is shipped from Calcutta in sailing-vessels, as its value is too small to pay for steam transport.

**Hemp.**—Hemp is widely distributed; but most of that used in this country is imported from Russia, Germany, and Italy. Manila hemp, the long fibre of a palm, is imported in very large quantities from Manila in the Philippine Islands. New Zealand produces a fibre known as phormium, or New Zealand flax. The agave of Mexico and Central America yields a fibre known as heniquen, or sisal hemp, used in the manufacture of twine, rope, &c.

The ramie or China grass is the fibre of a plant of the nettle family, grown in many warm lands.

**Other Raw Materials of Vegetable and Animal Origin.**

Palm-oil, from moist and hot West Africa, and the dried coco-nut, known as copra, from most Pacific islands and the sandy shores of the Indian Ocean, are imported for making soaps and stearine candles. Many trees in the wet jungles of intertropical regions exude a milky juice which when dry becomes elastic, and is known as india-rubber or caoutchouc. The Brazilian forests supply the best rubber. The port is Pará, at the mouth of the Amazon. Rubber is also imported from West Africa, and from the East Indies, through Singapore. A variety of plants growing on the borders of the desert exude juices which form gums and resins imported either for use as drugs or as the bases of varnishes, dyes, or compounds employed in tanning. They are chiefly brought from East Africa and Arabia.

Substances imported for Tanning and Dyeing.—Tannin, an astringent found in most tree-barks, is used for tanning hides into leather. Some barks are richer in tannin than others. Among those imported into this country are the bark of the hemlock-spruce from the United States, of an acacia from Australia, and of an oak from the Mediterranean, from the east of which region come the acorn-cups known as valonia, also used in tanning.

Vegetable dyes have become less important since the introduction of aniline dyes. Indigo, the most important, is extracted from the stems of a plant of the pea family, cultivated mainly in Bengal, which

supplies most of our indigo. Some is also brought from the West Indies and Central America. Cutch, or catechu, extracted from an acacia, is largely imported from India. Gambier, prepared from the young astringent leaves of a tree growing round the Strait of Malacca, and gamboge, a yellow viscid juice which exudes from the gamboge-tree of Cambodia and is collected in hollow bamboo stems, are imported from the Indo-China peninsula. The finest gamboge comes from Siam. Madder was formerly cultivated for making turkey-red; but alizarin, the colouring matter of this dye, is now obtained from one of the coal-tar products. Many dye-woods, such as logwood, come from Central America.

Of animal dyes, red cochineal is perhaps the most important. It is made from an insect which feeds on the cactus, and is obtained mainly from the Canary Islands. Mineral aniline dyes, made from coal-tar, are imported from Germany.

**Timber and Cabinet Woods.**—The forests of our country have long been exhausted, and nearly all the timber used in this country is imported.

Redwood and whitewood from the Baltic are used for all kinds of building purposes. The former is also employed in paving streets and for finer kinds of joiner-work, the latter for coarser carpentry. Yellow pine comes from Canada and the northern United States, and the beautifully-marked and resinous pitch-pine from the forests of the east of the Alleghenies. The great Douglas pines of British Columbia and Oregon, and the Californian redwood, are magnificent specimens of timber, being sometimes as much as three hundred feet in height. The former is used for making masts

and as both are free from knots, they are among the most valuable timber imported. Oak is brought both from the continent of Europe and from America, and the hard and durable teak is shipped from India, especially from Burma. Walnut from the south of Europe, the United States, and Canada, and mahogany from tropical America, are employed in high-class joiner-work and cabinet-making. Many other beautiful woods are imported for the latter purpose, mainly from tropical lands—for example, Brazilian rosewood; the satinwoods of the West Indies, southern India, and Ceylon; ebony from Ceylon; and bird's-eye maple from North America.

Much wood is imported in the form of pulp, mainly from Scandinavia and Canada. It is used for paper-making.

The bark of the cork oak, both raw and manufactured, is imported from Spain and Portugal.

**Furs and other Animal Products.**—Furs are largely imported for winter wear. Siberia, northern Russia, and Canada are the best great fur-preserves of the world. The ermine, fox, beaver, mink, and sable are among the animals hunted for their skins. The seal-fisheries of the Arctic seas employ a large number of vessels, and the skins fetch a high price. The whale-fisheries in the same waters are important for the value of the whalebone and blubber, the latter used for oil. Much of the catch of the Canadian and United States sealing fleets in the North Pacific finds its way to London, which is one of the great fur-markets of the world. The recent development of the bicycling trade has created a great demand for walrus-skins, which make the best

burnishers, and these fisheries will rapidly increase in importance in Arctic waters. The skins of the tiger, lion, leopard, and grizzly bear are prepared as ornamental and useful rugs. By far the largest number of skins and hides brought into this country are those of common animals, such as cattle, sheep, goats, and horses, to be converted into leather. These are chiefly obtained from the pastoral regions of Australia, North and South America, and South Africa.

Elephants' tusks, or ivory, are imported mainly from Africa, at a terrible cost of human life and suffering. The teeth of the hippopotamus and the walrus are also collected for the ivory market.

The feathers of the African ostrich are in great demand, and ostriches are reared now, not merely in South Africa and in Algeria, but also in Australia and Argentina.

The feathers of other birds are also imported for ornament, and those of the domestic fowls and of the eider-duck, the down of which is gathered from the islands of the North Atlantic and from Norway, are brought to stuff cushions, quilts, and other soft and warm articles.

Sponges are brought from the Mediterranean and from the West Indies.

#### Imported Minerals.

Besides the precious metals—gold, silver, and a small quantity of platinum—the common metals—iron, copper, tin, zinc, mercury, lead, and manganese—are the chief metals imported into the British Isles.

**Iron.**—Enormous as is the output of iron ore from British mines, it does not suffice for the numerous

furnaces of the United Kingdom, and between 6,000,000 and 7,500,000 tons of ore are annually imported, five-sixths from Spain. The red hematite iron ores of the north of Spain are shipped from Bilbao to South Wales. The black magnetic iron ores of Sweden are still largely used in making cutlery at Sheffield.

**Copper.**—The development of electrical engineering has led to a great increase in the use of copper, which is found in a pure state in some parts of Russia and near Lake Superior. About 250,000 tons are annually imported, the greater part either as ore, as partly refined ore known as regulus or copper precipitate, or as unwrought blocks. It is sent from the Sierra Morena, in Spain, through Huelva; from the Ookiep mines, in the west of Cape Colony, through Port Nolloth; and from the United States, Australia, and Chile. Copper-smelting is mainly carried on in South Wales (especially round Swansea), Lancashire, and Lanarkshire.

**Lead and Manganese.**—Between 200,000 and 240,000 tons of lead are imported annually. Most of the lead is obtained from Spain, Australasia, and the United States, where it is found as a sulphur-lead ore known as galena. **Manganese** comes from Russia, India, Chile, Brazil, and Turkey, mainly in the form of the black oxide, which is used for making manganese steel. Over 300,000 tons of ore are imported annually.

**Zinc.**—About 100,000 tons of crude zinc are annually imported, largely from Belgium, Germany, and the United States; and over 70,000 tons of zinc ore, principally from Italy and Greece, and in growing quantities from Tunis, Spain, and Australia.

**Tin.**—Over 40,000 tons of tin, in addition to 23,000 tons of tin ore, are brought, three-quarters of it from

the Malay Peninsula, which supplies most of the world with this metal, through the port of Singapore.

**Mercury** is largely used for making alloys, called amalgams, and in the refining of gold. Nearly all is derived from Almaden, in the Sierra Morena in Spain. About 3,000,000 lb. are imported every year.

Many other minerals are imported in smaller quantities, to be used pure or in combination with other metals.

**Platinum** is obtained from the Ural Mountains. It is not acted on by the atmosphere or any single acid, and it is very ductile and malleable, but not easily melted. It is used in electrical and chemical works.

**Nickel**, used in making nickel steel, and alloyed with copper to form German or nickel silver, comes mainly from New Caledonia. It is found in the Sudbury mines near Lake Superior, in Canada, and in various parts of the United States, as well as of Europe.

**Sulphur**, used in making sulphuric acid, is brought from many volcanic regions, more particularly from those of Italy.

**Graphite**, or plumbago, forms the lead of our pencils, and is also used as a lubricator and polisher. Since the once-famous Cumberland mines were exhausted, it is imported from Ceylon, Germany, and the United States.

**Nitrate of Soda**, or Chile saltpetre, found in the desert regions of South America, is imported for fertilising purposes. For this purpose many phosphates are brought from the south-eastern United States, but they have to be treated with sulphuric acid before they are used.

The fireproof asbestos is brought from Canada and Italy.

Nearly 350,000,000 gallons of petroleum are brought to this country from the wells at Baku, east of the Caucasus, through the Black Sea ports of Batum and Poti, and from the Pennsylvanian oil-wells in the east of the United States.

**Asphalt** is obtained from the pitch-lake in Trinidad.

Both **silver** and **gold** are largely imported into this country, not merely for coinage, but for use in the arts. Gold is chiefly extracted from the so-called gold quartz. The quartz is first crushed, and then the gold is taken out by chemical or mechanical processes. It is also washed from alluvial sands formed by the decomposition of gold quartz. The west of North America, Australia, and South Africa are the principal sources of the gold imported into this country.

Silver is not usually found pure. Large quantities are obtained from lead-silver ores, in which it is found in small quantities. It is abundant in the Andes, Mexico, Nevada, and Montana in the United States, and in Australia.

**Precious Stones.**—Diamonds are found in South Africa, especially at Kimberley and in the Transvaal, and also in Brazil. Rubies and sapphires are brought from Burma and Ceylon.

Pearls are the only precious stones of organic origin, with the unimportant exception of coral. They come from the Persian Gulf, Ceylon, the Sulu Archipelago, and the coasts of New Guinea and Northern Australia.

#### **Manufactured Articles Imported.**

Many manufactured articles are brought into the United Kingdom in spite of the great activity of its factories. Some of these, such as Turkey carpets or

Sèvres porcelain, are fine articles brought from regions specially famous for their manufacture. Others are common articles which other countries can put cheaply on our market. Many partially manufactured goods, such as cotton, woollen, and linen yarns, are sent to Britain for further elaboration.

A considerable proportion of these imported manufactured articles is immediately reshipped to our colonies and other lands with which we trade.

Cotton piece-goods to the length of over 70,000,000 yards, or 40,000 miles, are brought to this country every year, and about 75,000,000 yards of woollen cloths and stuffs. Many of the imported fabrics are of very fine quality and design. The woollens come mainly from France, where the finest qualities are made, and from Germany.

Both woollen and cotton goods are introduced in a further stage of elaboration, as hosiery and other articles of dress.

We spend on an average £9,700,000 per annum on imported manufactured cotton goods, and £10,000,000 on imported manufactured woollens, including carpets.

Most of the silk used in this country is manufactured abroad, in France, Germany, or Italy; and about £13,000,000 are annually paid for manufactured silk brought into this country.

Paris and Berlin supply mantles and many other articles of clothing, the French imports being remarkable for elegance and the German for cheapness.

Over £9,000,000 are spent every year on prepared leather, and £700,000 on boots. Fourteen million pairs of gloves are annually imported from Paris, Grenoble, Brussels, and Copenhagen.

**Lace**, buttons, studs, and much haberdashery are brought from the Continent.

Many articles of household use are also imported. China, porcelain, and earthenware are brought from the great Continental potteries at Limoges and Sèvres.

Kitchen utensils and tin-plate ware are largely obtained from the United States; cheap cutlery from the same country and from Germany.

Germany supplies many of the chemical manufactures; glass is brought from Germany, Bohemia, and Belgium; paper from Scandinavia, Germany, and U.S.A.

Many scientific instruments are also of German and French manufacture. £1,000,000 are spent annually on musical instruments, brought chiefly from Germany.

Cheap wooden matches are imported from Scandinavia, and wax ones from Belgium.

About £1,000,000 are spent every year on watches, and £500,000 on clocks, of foreign manufacture.

The growth in our imports of manufactured iron is one of the most remarkable phenomena in recent years. Nearly £8,000,000 are spent on foreign manufactured iron, not much under one-third of the value of our exports. Much of this comes from the United States, Belgium, and Germany. In 1913, £7,411,000 were spent on motor-cars and cycles.

## CHAPTER VIII.

### EXPORTS.

**Exports and Imports.**—The trade relations of this country are very complex. Britain plays the part of a great middleman, acting as an agent between buyers

and sellers in all parts of the world. It trades not merely in its own surplus produce—raw and manufactured—but in almost every article of colonial and foreign produce—raw and manufactured—in which a profitable trade can be done. An immense number of commodities, therefore, are imported only to be re-exported at a profit, chiefly through London. The existence of this entrepôt trade, as it is called, must always be borne in mind in studying lists of our imports and exports.

**Home and Foreign Produce.**—With the exception of coal, most of our raw exports are first imported. Cotton, wool, the skins of sheep and other animals, tallow and animal fat, india-rubber, and many other forms of raw produce, as well as large quantities of food-stuffs, which are included among our exports, are all of foreign origin. On the other hand, manufactured articles, which figure so largely among our exports, are chiefly, though not exclusively, of home origin.

**Mineral Exports—Raw and Manufactured (chiefly of Home Origin).**—Coal is by far the most important mineral exported, amounting in value to one-tenth of the total exports of the country. About 77,000,000 tons, or 27 per cent. of the total output of British mines, were exported in 1913, and 36,500,000 tons in 1898. Large quantities are sent to countries bordering the North and Mediterranean Seas, which have little or no coal of their own, such as Scandinavia, Finland, Denmark, Holland, Spain, Portugal, Italy, and Egypt, and to those parts of coal-producing countries, such as Germany, France, and Russia, which are more cheaply reached by boat from Britain than by rail from the

home collieries. Welsh coal is sent all over the world, and supplies the coaling stations for the British navy as well as the vessels themselves.

Between 18,000,000 and 20,000,000 tons of coal are shipped for the use of steamers engaged in the foreign trade, and are not usually reckoned among exports proper.

**Iron** is exported in many different forms. The quantity of simple pig and puddled iron averages over 1,000,000 tons per annum. Railroad plant of all kinds is sent to nearly all the countries of the world, more particularly to European countries and to the East Indies. It amounts to about 700,000 tons.

Tin plates and galvanised iron sheets together average annually over 850,000 tons.

Cast and wrought iron, unwrought steel, hoops, sheets, boiler plates, wire, bar, angle, and rod iron are among the other forms in which this metal is exported, to a weight of about 800,000 tons per annum.

The total value of iron and steel and manufactures thereof exported in 1913 was over £54,000,000.

Iron is the principal constituent of such exports as cutlery, hardware, and tools, of which more than £5,400,000 worth are annually exported; of cycles and motor-cars, £3,800,000; of locomotives, agricultural and other steam-engines, £6,800,000; of textile, agricultural, and other machines and implements. The total amount of all machinery and mill-work exported, including steam-engines, averaged about £35,000,000 between 1911-13.

Among miscellaneous exports included under the head of metals, the most important are wrought and

unwrought copper, brass, lead, tin, zinc, telegraph apparatus of all kinds, electroplate, small firearms, guns and ammunition, clocks and watches, and others too numerous to mention.

The total exports of metals and articles manufactured from them, including ships, averaged about £120,000,000 in 1911-13, or nearly one-fourth of the total exports of British origin.

**Textile Exports** (chiefly of Home Manufacture).—Our textile exports are numerous and valuable. Cotton yarns and manufactured goods make up about one-quarter of the domestic exports of this country, and woollen yarn and manufactures nearly one-twelfth, the exact quantity varying from year to year. Over 5,800,000,000 yards, or 3,200,000 miles, of **cotton piece-goods**, nearly half unbleached, are exported annually to all parts of the world, especially to the hotter regions, such as Mediterranean lands (more particularly Egypt and Turkey), the West Indies, South America, West and Central Africa, India, the East Indies, China, Japan, and Australia, which are our chief customers for these commodities. These cotton piece-goods were worth over £97,000,000 in 1913. If the cotton yarn, exported mainly to European countries (Germany, Holland, Turkey) British India, and Japan, and other cotton goods be added, the total cotton manufactures we export are valued at over £108,000,000 on the average of the three years 1911-13.

About 94,000 miles of woollen and worsted goods, about 7,700,000 yards of flannel, and 690,000 pairs of blankets are exported annually. The woollen trade is mainly with the cooler countries of the world, more particularly with European countries (especially

France, Belgium, and Germany), the United States and Canada, Australasia, Argentina, and Japan.

The hostile tariff of the United States has lately diminished the export of woollen goods to that country. Woollen and worsted tissues exported to the United States in 1896 were worth £3,500,000; in 1898, £1,000,000; but in 1909 they had risen to £1,400,000. The total woollen manufactures of all kinds, including yarns, exported in 1911-13 averaged £34,000,000.

Approximately, 100,000 miles of linen goods are exported, composed chiefly of white or plain linen. About 4 per cent. consists of sailcloth and sails.

The chief markets for linen goods are the United States (which takes about half of the total), Australia, Germany, Canada, and France. The annual value of linen goods exported averaged £9,000,000 in 1911-13.

Between 4750 and 7400 miles of silk stuffs are annually exported. Twist or yarn goes chiefly to the United States, Germany, and France; broadstuffs of silk or satin to France; handkerchiefs and shawls to India. The United States and our colonies receive all kinds of silk goods. The total exports are worth over £1,900,000.

Over 100,000 miles of jute piece-goods are exported to the United States, Argentina, Canada, and other countries. Over half of the jute yarn exported is sent to Brazil. Jute articles, excluding bags, were exported to the extent of over £2,400,000 per annum in 1911-13.

A large number of miscellaneous textile articles are exported, including cotton and linen thread for sewing purposes, lace, hosiery, carpets of wool and jute, and many others.

The total annual value of cotton, woollen, and linen textiles exported averaged nearly £99,000,000 in 1896-8, and over £150,000,000 in 1911-13.

**Miscellaneous Manufactured Articles** (chiefly of Home Manufacture).—A large trade is done in **chemical products** (alkalies, bleaching materials, manures, and medicines), amounting to about £17,000,000 per annum: in glass and earthenware, to about £3,800,000 per annum; and in paper and paper articles, to £2,400,000 per annum.

Rubber goods worth £1,500,000 are annually exported; leather, unwrought and wrought (boots, shoes, and saddlery, &c.), to £6,000,000 worth per annum; furniture, haberdashery, millinery, books, and many other articles are sent abroad in large quantities.

**Raw Produce for Manufactures** (chiefly of Foreign Origin).—In addition to coal, iron, and other ores, which have already been mentioned, a large export trade is done in textile raw materials. Of these **wool**, in all its forms, is by far the most considerable, averaging in value £17,000,000. From 6,500,000 to 7,800,000 sheepskins and about 2,500,000 cwt. of wool are exported annually, chiefly to France, Germany, the United States, and Belgium. Imported **cotton** (average, 2,300,000 cwt.), dressed and undressed **flax**, and **hemp** are also exported in large quantities. **Caoutchouc** and **gutta-percha** have grown in recent years to be among the chief articles of our entrepôt trade, averaging over £14,000,000 worth in 1911-13.

**Food Exports** (chiefly of Home Origin).—The export of **fish**—one of the few natural products which this country exports—is very large. Over 3,000,000 barrels of herrings, worth over £5,000,000, were sent

abroad annually in 1911-13. Our largest customers for fish are those countries where the use of flesh is forbidden on religious grounds at certain seasons, such as Germany, Russia, and the Roman Catholic countries bordering the Mediterranean.

**Live-stock** is in considerable demand abroad, chiefly for breeding purposes. Of live-stock used for food, sheep are the most important; but the number exported is less than that of horses, which are largely exported to Belgium.

Of **vegetable** home-grown exports, the potato is the most important, the quantity exported varying from year to year with the size of the crop. In 1898 only about 194,000 cwt. were exported and in 1894, 1,073,000 cwt.

Our food exports include colonial produce of all kinds; cereals, such as maize, wheat, wheat-flour, and barley, to which may be added 320,000 cwt. of biscuits and cake, and a growing quantity of confectionery; foreign beef and pork; dairy produce and eggs. Colonial produce is the most important.

## CHAPTER IX.

### THE GREAT TRADE-ROUTES FROM THE BRITISH ISLES.\*

FOR an island country, such as Britain, transport by sea is all-important, bringing it into contact with all the maritime countries of the world. We have seen that much of our raw material and food is imported, and that we are dependent upon foreign

\* See map on page 133.

markets for the sale of our surplus manufactures. It is, therefore, important to understand the main sea-routes and the principal commodities carried over them.

### The North Sea and Baltic Trade.

When population and manufactures were concentrated in the south-east of Great Britain, the greater part of our trade was with the ports on the opposite side of the English Channel and the North Sea, more particularly between the Thames and the Rhine ports. In modern times the North Sea trade is still very valuable; it is carried on from all the east coast ports, more particularly from London, Harwich, Grimsby, Hull, the north of England ports, and from those of the Forth. The North Sea trade may be divided into two kinds, the mainland and the Scandinavian trade. The mainland trade is with France, Belgium, Holland, and Germany; the chief ports being Dunkirk (Dunkerque) in France, Antwerp (Anvers) in Belgium, Rotterdam and Amsterdam in Holland, Bremen and Hamburg in Germany—much of whose trade also goes through Holland and Belgium. The Scandinavian trade is largely with Bergen, Kristiansund, Kristiania, and Drammen. The chief exports to the mainland are cotton and woollen yarn and manufactures, coal, metals, and machinery—the Humber ports doing the largest trade.

From Belgium we receive cotton, silk, woollen, and linen goods greater in value than our exports to these countries; also flax, glass, iron, zinc, sugar (both refined and unrefined), eggs, and dairy produce. From Holland we obtain butter, margarine, cheese, fresh and preserved meat (especially mutton), sugar, and colonial

produce, such as cacao and rice. We import much German, Austrian, and Swiss produce through Holland and Belgium, notably silk, sugar, clocks and watches, glass, gloves, wine, condensed milk, toys, and aniline dyes.

To Norway the chief exports are cotton, woollen, and metal manufactures, and coal, in return for which we obtain timber, wood-pulp, paper, fish, ice, and condensed milk.

A large passenger trade is carried on from Harwich to the Hook of Holland (Hoek van Holland), Rotterdam, and Antwerp; from Queenborough to Flushing (Vlissingen); from Dover to Ostend; and in the summer months also from Tilbury to Ostend.

The Baltic trade is with regions having large areas of forest and agricultural land, but little coal or other minerals, except the iron of Sweden.

Navigation is interrupted from three to five months every winter, owing to many of the harbours being ice-bound. The waters of the Baltic are only one-quarter as salt as those of the ocean, and freeze more easily, although the whole sea is but rarely completely covered with ice. The use of ice-breaking steamers in recent years has helped to keep the Baltic navigable. Several canals unite the North and Baltic Seas. By far the most important is the Kaiser Wilhelm Canal between Brunsbüttel, near the mouth of the Elbe, and Holtenau, near Kiel, which is large enough to admit ships of all sizes. This canal saves about 240 miles (twenty hours) on the journey from London to Baltic ports other than Danish, 180 miles (fifteen hours) from the Humber, and over 100 miles (nine hours) from the Tyne ports. From the Forth, the old route by

the Skager-Rak and the Kattegat is as short, but its navigation is much more dangerous. Copenhagen (Kjöbenhavn) on the Sound, is the great commercial centre of the Baltic trade. Coal, metal, and manufactured goods of all kinds are sent thither, and Danish butter, bacon, and eggs are shipped to Britain.

Coal, metals, textile fabrics, and machinery are the chief products sent to the Baltic ports, the cold climate creating a greater demand for woollen than for cotton fabrics. In return we obtain timber, wood-pulp, iron, butter, paper, and matches from Sweden through the ports of Göteborg (usually written in English, Gothenburg), Malmö, Norrköping, and Stockholm. Timber, cereals, flax, hemp, linseed, oil-seed cake, and butter are imported from Russia through St Petersburg, Riga, and Revel. From Germany, through Memel, Königsberg, Stettin (with Swinemünde as its deep-water harbour), and Kiel, we get timber, butter, and some manufactured and chemical goods; but most of these pass through the North Sea ports.

### **The European Atlantic Trade.**

A very large proportion of British trade between the British Isles and the Continent is carried on across the **English Channel**, between Dover and Calais, Folkestone and Boulogne, Newhaven and Dieppe, Southampton and Le Havre, Weymouth and St Malo. A large part of the trade between London and Paris is carried on by direct shipment from London to Le Havre or Rouen on the Seine, and steamers regularly ply between London and Paris. A considerable trade is also carried on between the coalfields of South Wales and the north of England

and the ports in the north of France. The latter also trade with Liverpool.

Trade with the Bay of Biscay and the coast of Portugal and Spain is actively carried on through all west coast ports, more particularly between Liverpool and Bordeaux. Bilbao, Santander, and other ports in the north of Spain send unsmelted and partially smelted ores to the South Wales and Lancashire furnaces. The clarets of Bordeaux are shipped direct to London, Leith, and Liverpool. From Oporto and Cadiz respectively come port and sherry wines; from Lisbon, olives, oranges, and other fruits; from Huelva and Cadiz, copper, manganese, and other minerals from the Sierra Morena, as well as cork, fruit, and other products of Andalusia. Coal, metals, and manufactured cottons are sent in exchange, chiefly from Liverpool, London, and the coal exporting ports of northern England and Scotland.

#### **The Mediterranean Trade.**

The Mediterranean, like the Baltic, is a sea with few coalfields near it, those of the south of France being comparatively unimportant. The forests of the Mediterranean have been nearly all cleared, so that wood is not available for fuel as in the case of the Baltic. Consequently a large trade in coal is done with the Mediterranean ports, chiefly for industry and transport, as the southern climate greatly reduces the domestic consumption.

The Mediterranean is not the seat of very great industrial activity save in the valleys of the Ebro, Rhone, and Po, and manufactured goods, more particularly cottons, linens, and light woollens, are among

the articles chiefly in demand. In exchange for these commodities, our ships bring back subtropical fruits—oranges, lemons, figs, olives, grapes, and also dates from the borders of the desert. Minerals are almost entirely obtained from the south of Spain. A large trade in cereals passes through the Mediterranean from the Black Sea ports.

To protect our commerce in the Mediterranean and to guard the route to India, Britain possesses three stations in the Mediterranean: Gibraltar, on the Spanish mainland in the west, guarding the strait of that name; the island of Malta, commanding the passage between Sicily and Africa; and Cyprus, protecting the eastern Mediterranean. Since 1882 Egypt has been under British control. This is jealously viewed by our Continental neighbours, owing to the importance of the Suez Canal as an international highway.

**Spanish Trade.**—From Malaga, Almeria, Cartagena, and Valencia in the south of Spain, grapes, raisins, wines, oranges, lemons, almonds, and copper, mercury, and other minerals from the Sierra Morena, are sent to this country, which in return exports coal, metal goods, and textile manufactures. Barcelona, to the north of the mouth of the Ebro, is the port for the rich lands of Catalonia, carrying on a trade with Britain similar to the southern ports.

**French Trade.**—Cette, in the south of France, is the great wine port of the Mediterranean. Marseilles is the commercial outlet for Provence and the Rhone valley. It lies east of the Rhone delta, the shallow distributaries of that river not being navigable for large vessels. Wine and olive-oil are exported to

this country, coal and metal goods being taken in return.

**Italian Trade.**—Genoa (Genova), Leghorn (Livorno), and Naples (Napoli) receive large quantities of coal from South Wales, Newcastle, and Scotland; fish from Scotland and from the south-west of England; engines, railway plant, and metallic goods. Through Genoa itself we import little, our trading-vessels going farther east for their return cargo, to the Levant, to the Ægean and Black Seas, or to Algiers. The transporting of coal and other commodities from Britain is passing into the hands of Italian shippers. From Naples olive-oil, marble, wine, hides, and hemp are obtained in return. A considerable trade is done with the ports of southern Italy, more particularly with Palermo and Messina, which take cotton, woollen, and metallic manufactures, and coal, in exchange for wine, oil, southern fruits, and sulphur.

**Adriatic Trade.**—From Venice (Venezia), the centre of a considerable Adriatic trade, our ships bring back little, usually leaving the harbour loaded with ballast, to take in wheat, flour, and wine at Trieste and Fiume, the ports of Austria and Hungary respectively.

**Greek Trade.**—Valonia and currants are the chief exports of Patras and Piræus, which receive industrial produce in exchange. The Corinth Canal, across the isthmus of that name, saves the long journey round the south of the Morea. Syra, or Hermopolis, is the coaling station and chief port of the Grecian Archipelago, and exports emery and iron ore.

**Turkish Trade.**—From Salonica (Slavonic, Saloniki; Turkish, Selanik) cereals, tobacco, wool, and opium

are obtained. Constantinople (Turkish, Stambul), on the Golden Horn, is one of the most important commercial cities in the world. Lying between the Black Sea and the Mediterranean, and between Europe and Asia, it is the market through which the products of two seas and two continents are exchanged. Manufactured goods of all kinds are sent out from Britain in vessels which return with Turkey carpets made by Armenians, mohair, wool, and opium.

**Danube Trade.**—From the Danube ports, more particularly Sulina, Galatz, Braila (or Ibraila), and Varna, the cereals of the Hungarian and Wallachian plains are shipped.

**Russian Black Sea Trade.**—Cereals and flour are the chief products obtained from Odessa, Kherson, and Taganrog, the principal ports of southern Russia. From Batum, in the east of the Black Sea, petroleum-oil from Baku in the eastern Caucasus is exported.

**Asia Minor Trade.**—Trebizond distributes most of the imports intended for Asia Minor and Persia, and collects much Persian produce, more particularly silk and woollen, for export to this country.

Smyrna, the great port of Asia Minor, receives from this country manufactured articles of all kinds—metal and textile, chemical and leather. Sultana raisins, barley, beans, figs, olive-oil, valonia, gall-apples, drugs, cotton- and other seeds, and tobacco are among the most important exports.

**Syrian Trade.**—Beirut (Beyrout) and Jaffa, the chief ports of Syria, send wool to America by Liverpool; but the chief trade is in fruit.

**Egyptian Trade.**—From Alexandria the products of Egypt—cotton, cotton-seeds, sugar, beans, onions,

cigarettes—together with gums and ivory from the Sahara and the Sudan, are shipped.

**North African Trade.**—Bengazi and Tripoli trade in gums and other products, brought across the desert, and, in common with Tunis, Algiers (Alger), and other ports in northern French Africa, export esparto grass (for making paper) and barley. Algiers also exports iron ore. In return we send coal, cottons, and metal goods.

#### **Extra-European Atlantic Trade.**

The Atlantic trade may be divided into the North American trade, the trade with Central America and the West Indies, the Guiana and Brazilian trade, the Plate trade, the West African trade, and the South African trade.

The **North American Atlantic trade** is of great importance to Britain. Not merely do we get the greater part of our food-supply from the United States and Canada, but a very large proportion of our manufactured goods are sent to these countries. The St Lawrence ports, Quebec and Montreal, are closed in winter by ice, and the traffic is then diverted to Halifax, St John, Portland (Maine), Boston, and New York. With the last two ports, together with Philadelphia and Baltimore, a very large proportion of our trade with the United States is carried on. From Halifax and St John, cereals, flour, cattle, meat, timber, cheese and other dairy produce; and from the United States ports, iron goods in addition, are sent in return for every kind of manufactured article. High tariffs and the steady development of American industries are tending to reduce the importance of our exports to

the United States, while the preferential tariff granted by Canada to the mother-country serves to foster our trade with that colony. Wilmington, Charleston, and Savannah send us sea-island cotton, as well as pitch-pine, turpentine, and resins from the forests of the southern Appalachians. Pensacola, Mobile, New Orleans, and Galveston are the chief ports on the Gulf of Mexico, from which we obtain raw cotton, cotton seeds and oil, tobacco, wheat and meal, sent down the Mississippi to New Orleans.

**Central American Trade.**—Manufactured goods are the chief exports to Vera Cruz, the principal port of Mexico, from which metals (more particularly silver), mahogany, and cigars are brought. Belize, in British Honduras, and Bluefields, in Nicaragua, export mahogany and other fine woods from the wet and densely-forested eastern regions of Central America; but most of the trade of this region is carried on from the Pacific ports which are on the side of the isthmus best situated for agriculture and trade. When the Nicaragua or Panama Canal is cut these ports will be brought much nearer Britain.

**West Indian Trade.**—The West Indies exchange sugar and tropical fruits for manufactured goods of all kinds. From Havana, in Cuba, we get tobacco and cigars; sugar, molasses, and rum from Kingstown in Jamaica; cacao from Port of Spain, which also exports the asphalt of the Trinidad pitch lake. Barbadoes is the British shipping centre for the Lesser Antilles.

**The Guiana and Brazil Trades.**—From La Guaira, the port of Caracas, the capital of Venezuela, and the other ports in the north of South America cacao is the chief export. Sugar is principally brought from George-

town, on the Demerara River in British Guiana. Cacao is also shipped from the north of Brazil; but the chief trade of that district is in india-rubber, which is shipped from Pará, at the mouth of the Amazon. It is also shipped from Manaos (situated where the Rio Negro joins the Amazon), Pernambuco, and Bahia, the latter the second port in Brazil. These ports also send coffee, sugar, cotton, rosewood, hides, and diamonds. The great centre of Brazilian trade is Rio de Janeiro, from which all these articles are exported. Santos, farther south, is the outlet for the rich coffee district of São Paulo.

**The Plate Trade.**—Monte Video and Buenos Ayres are the chief ports on the Plate estuary, from which wheat, maize, and other cereals, cattle, sheep, wool, and hides from the Plate basin, are exported in return for coal, chemicals, textile and metal goods.

**The West African trade** is almost entirely in cotton and metal goods and spirits, the latter usually of the vilest description. These are sent to Freetown, Akra, Lagos, Akassa, Bonny, and other ports on the Gulf of Guinea, from which india-rubber, palm-oil, oil-yielding nuts, and ivory are exported. The opening of railways is facilitating trade, and hopes are entertained that much raw cotton may be obtained from this region.

To **South Africa** we send out clothing of all kinds, metal goods, machinery, leather, cotton and woollen goods, paper and stationery, furniture, carriages, and in fact all manufactured articles required either for domestic or industrial purposes. In return we obtain diamonds, gold, copper, wool and skins (both of the sheep and the angora goat), hides, and ostrich feathers. Capetown, Port Elizabeth on Algoa Bay, East London,

Durban on Port Natal, and Lourenço Marques on Delagoa Bay are the chief ports for the trade of South Africa.

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### **Indian Ocean Trade.**

The trade of the Indian Ocean was formerly carried on round the Cape of Good Hope; but since the opening of the Suez Canal the shorter route is generally taken by steamers. The trade carried on across the Indian Ocean may be divided into East African, Arabian, Persian, and the Indian and Ceylon trade.

The **East African trade** is still carried on by both routes. The principal southern ports have been already dealt with. Zanzibar is the great trade-centre of East Africa. From the island itself the chief export is cloves; but much of the ivory and rubber brought from the interior to Vitu, Mombasa, and Dar-es-Salaam is sent to Zanzibar; but Mombasa, connected by railway with the Victoria Nyanza, is the most important. Trade is carried on at the mouth of the Zambesi with the Shiré Highlands, part of the British Central Africa Protectorate, where coffee has been cultivated in recent years, and rice, tobacco, cotton, and tea can be successfully grown. Trade with Madagascar has diminished since the island became a French possession. From Mauritius, the Seychelles, and other islands sugar is the chief export.

The **Arabian trade** is mainly in gums. These are exported through Jedda and Aden (the latter a British possession guarding the entrance to the Red Sea). Wool, carpets, hides, dates, shells, opium, and gums are among the chief articles exported from the **Persian Gulf**, mainly through Bushire, on the coast and Basra,

in Mesopotamia. Dates, gums, and a small quantity of goats' and camels' hair come from the Arabian steppes through Persian Gulf ports.

**Indian and Ceylon Trade.**—India is a very important market for our manufactures, sending us in return both raw materials and manufactured articles of every kind.

Karachi, the port of the Indus, exports wheat, oil-seeds, wool, cotton, and hides; and imports large quantities of railway plant for the rapidly increasing network of lines.

Cotton and cotton yarn, oil and oil-seeds, wheat and other cereals, opium, leather, guns, and tea are sent to this country from Bombay. In return it takes chiefly cotton goods and machinery, railway plant, metal goods of every kind, and manufactured articles for distribution to western and central India.

From Colombo, in Ceylon, are brought all kinds of tropical products, more particularly tea, cacao, quinine, spices such as cinnamon, coco-nuts and copra, areca-nut, tobacco, and vegetable ivory. The export of coffee, formerly very important, has declined owing to the destruction of the plants by disease.

Madras does a large export trade in raw cotton, coffee, seeds, indigo, leather, Palmyra palm sugar for brewing and for fattening cattle, oil, coco-nuts, copra, tobacco, and hides, especially goatskins.

Much of our Indian trade passes through Calcutta. Jute is exported to Dundee both from this port and from Chittagong in sailing-vessels, which double the Cape of Good Hope. Tea, rice, wheat, indigo, some rubber, raw hides of cattle and goats, gunny sacks, and linseed are other important articles brought from Calcutta to this country.

Rangoon distributes the produce of Burma, including rice (which is by far the most important), catch, teak, and precious stones such as the ruby.

### Pacific Trade.

There are three routes from the British Isles to the Pacific Ocean: by the Suez Canal and the Indian Ocean, by the Cape of Good Hope and the Indian Ocean, and by Cape Horn. The Panama Canal when completed, or the railway across the isthmus of Tehuantepec, greatly shortens the distance to many Pacific ports, more particularly to those on the west coast of America. It has also been proposed to avoid the long journey round the south of the Malay Peninsula by cutting a canal across the isthmus of Kra.

The Pacific trade may be divided into the East Indian trade, the China and Japan trade, the North American trade, the tropical American trade, the South American trade, and the Australian trade.

The **East Indian trade** resembles the West Indian in many respects. The intertropical islands of eastern Asia are rich in forest products, yielding fancy timbers and dye-woods, juices such as guttapercha, and fibres such as Manila hemp. Tin, spices, sago, sugar, guttapercha, rubber, catch, gambier, and fruits are exchanged for cotton goods and hardware.

Singapore, on an island of the same name at the southern end of the Malay Peninsula, is the natural centre for the western ports of the East Indies, and a port of call for ships passing through the Strait of Malacca. Local trade is mainly in the tin of the Malay Peninsula; but all East Indian products are brought to Singapore for transhipment.

Batavia, on the island of Java, occupies a similar position with regard to the southern part of the group in the Sunda Strait. It is the capital of the Dutch East Indies, the rich produce of which is brought to Batavia for shipment to Europe. Amboina, in the Moluccas, is the centre of the spice islands.

Manila, on Luzon, the largest of the Philippines, is the northern centre of the East Indies. Under United States control it is growing rapidly in commercial importance. Ships sailing to the China Sea can seek the shelter of Luzon during the North-east Trades, and it also lies on the direct route between Hong-kong and Australia. Sugar, cheroots, and Manila hemp are the chief articles exported from the Philippines, in addition to ordinary East India produce; but the resources of these valuable islands are still practically undeveloped.

From Bangkok in Siam ships bring back teak, rice, and tin.

**China and Japan Trade.**—The populous countries of eastern Asia are excellent customers, taking more particularly large quantities of cotton goods and hardware.

The trade of China should develop considerably with the opening up of the country by railways and the use of steamers on the Yang-tse-kiang and other navigable waterways. China will be a customer not merely for the cottons and hardware which form the bulk of the trade at present, but a great importing centre for railway plant, machinery, and metal manufactures of all kinds, to be utilised in the building of new railways and factories.

**Hong-kong**, a British island at the mouth of the

Si-kiang, in close communication with Canton, the great southern port of China, is the outlet through which about 45 per cent. of the foreign trade of China is carried on. From Hong-kong and Canton the tea and silks of southern China are largely exported.

There are many ports on the rocky eastern coast of China south of the Yang-tse-kiang, such as Amoy, Fuchau, and Hangchau; but the bulk of the trade of China passes through the port of Shanghai, near the mouth of that river. Shanghai is the great importing centre of central China, and does a large export trade in tea and silk.

There are several ports on the Yang-tse-kiang, of which Hankau (= Hannmouth) at the mouth of the Han River, a tributary of the Yang-tse-kiang, is the most important, although river steamers proceed as high as Ichang, one thousand miles from the sea.

The trade of northern China passes mainly through the port of Tientsin, on the Gulf of Pechili; that of Manchuria through Niuchwang, on the Liautung Gulf. These gulfs are frozen in winter; but during the other months a vigorous trade goes on, more particularly from Tientsin, which is the port of Peking, the capital. Exports from this region are comparatively unimportant.

Silk, silk goods, and straw plait are our chief imports from Japanese ports. Copper, rice, carpets, lacquer ware, china, and beautiful fabrics are among the other goods exchanged for the cottons, woollens, metals, machinery, steamships, engines, and implements of all kinds sent from this country. The chief ports are Nagasaki, on the island of Kiushiu, and Yokohama,

the port of the capital, Tokyo, on the main island, Honshiu or Nippon.

**North American Pacific Trade.**—From Vancouver, and the towns of the Canadian Pacific Railway, and Victoria, on Vancouver Island, passengers and mails are conveyed to and from the Far East of the Old World, Australia, and New Zealand. The amount of direct oceanic communication with the British Isles is not very great. Manufactured articles are carried out in vessels which bring back timber from British Columbia, Tacoma, and Seattle, on Puget Sound, and Portland (Oregon), from which, as well as from British Columbia, canned salmon are largely obtained. These are also grain ports; but most of the wheat raised in western America is exported through San Francisco, which also exports gold and silver. In recent years the fruits, wines, fish, fresh and dried meat, of the rich Californian valley have been largely exported from San Francisco, and from Los Angeles in the south, to which ports clothing, metallic and textile goods, and sacks to hold grain, are consigned from this country.

**Tropical American Pacific Trade.**—Coffee and cacao are the most important exports from the Pacific ports in tropical America. Coffee is brought from Puntarenas, in Costa Rica. Guayaquil, the port of Ecuador, exports more cacao than any other port in the world.

**South American Pacific Trade.**—The dry regions of Peru and Bolivia furnish guano, cinchona (quinine), sugar, raw cotton, and india-rubber, while alpaca wool and silver come from the mountains, and vanilla from the wetter eastern sides. The chief harbours for imports are Callao, close to Lima (the capital), and

Molendo, from both of which railways ascend the Andes. Antofagasta, the chief port of northern Chile, is connected with the plateau of Bolivia by a railway, which brings down silver, copper, tin, cinchona, and other products of that country, as well as nitrate of soda from the Atacama desert, across which it passes.

Valparaiso, the port of Santiago (the capital), is the chief harbour of Chile. Cotton, mixed cotton and woollen goods, iron, ironware, and machinery are the chief articles taken out by our ships in exchange for the wheat, copper, wool, and guano shipped at these ports.

**Australian Trade.**—Australia is reached from Britain both by the Suez Canal and by Cape Horn. Mails and passengers from this country can also proceed to Australia and New Zealand by the Transatlantic lines to Montreal and New York, by rail to Vancouver and San Francisco, and thence by steamer across the Pacific. The exports from this country are chiefly manufactured goods, which are exchanged for wool, flesh, hides, southern fruits, butter, tallow, leather, gold, copper, and lead.

Fremantle, at the mouth of the Swan River, **Western Australia**, is the first port touched by vessels from western Europe, and here West Australian gold, wool, and hardwood timber are shipped. Fremantle is the port of Perth (the capital); and Albany, on King George Sound, which is joined to Perth by railway, is the southern port.

Port Adelaide, or Glenelg, both ports and suburbs of Adelaide, the capital of **South Australia**, is the next port touched at. Here wool, lead, copper, gold, silver,

wine, and skins are shipped in return for textiles, cotton and woollen clothing, shoes, iron, railway plant, hardware, tobacco, beer, and spirits.

Melbourne, on Port Phillip, is the chief town of Victoria. The goods imported from Britain are the same as in the case of Adelaide, but on a larger scale. Wool, butter, gold, and copper are the most important articles we take in return; but tallow and unworked leather are of considerable importance. Frozen and preserved meats and a little wheat are also sent to Britain.

Sydney, on Port Jackson, the capital of New South Wales, does a very large trade. Gold, silver, and wool are more, dairy produce less, important than in the case of Victoria, and a considerable quantity of meat, leather, tallow, hides, copper, and lead is exported.

In Queensland there are several ports to which we ship the same commodities as to the other Australian ports. The cargoes brought back differ considerably. Brisbane, in the south, is the capital, and the most important port. Here wool, hides, tallow, flesh, and preserved meat are still among the principal exports. Gold and shell are also important. From Rockhampton, Mackay, and Townsville railways run far into the interior. Townsville receives much gold from the Charters Towers mines. Wool becomes less important in the far north, and is replaced by tropical products.

Tasmania (capital, Hobart) has also a large wool trade, and Tasmanian fruits, more particularly apples, are becoming known in British markets.

**New Zealand.**—Auckland and Wellington are the

busiest ports in North Island; Lyttleton and Dunedin in Middle Island. Wool, meat, dairy produce, tallow, sheepskins, and Kauri gum are the chief exports. Kauri gum is obtained principally from North Island. The sheep of the Canterbury Downs in the Middle Island yield exceptionally fine mutton. Leather is also exported, as well as gold and silver.

## CHAPTER X.

### THE TRADE OF THE UNITED KINGDOM.

THE trade of the British Isles has passed through three stages. In the first, or primitive stage, which is of great antiquity, minerals, more particularly the tin of Cornwall, attracted traders from the Mediterranean. In the second, or mediæval stage, organic raw products, more particularly wool and hides, were exchanged for manufactured goods and articles of luxury. In the third, or modern stage, the process is to a large extent reversed, and manufactured goods have become the commodities chiefly offered in exchange for food, raw materials, and luxuries.

The trade of the United Kingdom has trebled itself during the last forty years. During the five years 1855-59 the average value of the imports was £169,000,000, and of the exports £116,000,000—making an average total trade of £285,000,000. Forty years later, during the four years 1895-98, the average value of the imports was £445,000,000, and of the exports £292,000,000—making an average total trade of £737,000,000, or, approximately,

three times as much as between 1855 and 1859. In 1911-13 the average annual value of imports was over £731,000,000, and of exports of all kinds £597,000,000, a total trade of £1,328,000,000. Over one-sixth of the exports are of foreign and colonial origin. This trans-shipment trade has long been an important feature of our commerce, especially of London. Over 90 per cent. of this trade is English, and 8 per cent. Scottish.

In the imports the increase has been general. In the exports an increase has taken place in the case of most commodities, more particularly under the heads of machinery, textile fabrics, metals, and raw materials, more especially coal.

The tonnage of trading vessels engaged in foreign trade which entered the ports of the United Kingdom in 1913 amounted to nearly fifty million tons, and sixty-eight million tons of shipping left its ports during the same period. This is an increase within five years of nine million tons in the tonnage of vessels entering British ports, and of twelve million tons in that of vessels leaving them. The coastal trade is nearly sixty-two million tons entered, and as much cleared.

About one-fourth of the imports come from British possessions, and one-third of the exports are sent to them. By far the most important part of our import trade is with the United States, amounting to nearly one-fifth of the whole. In 1913 over 10 per cent. of our imports came from Germany; 6 per cent. from France;  $5\frac{1}{2}$  per cent. from India; 5 per cent. from the Argentine Republic and Australia respectively; 4 per cent. from Canada; and about 3 per cent. from

Denmark, the Netherlands,\* Belgium, New Zealand, and Egypt respectively.

In the same year (1913) British India took over 11 per cent. of our exports of all kinds, a larger proportion than any other country. Germany and the United States took over 9 per cent. each; France and Australia accounted for over 6 per cent. each; British North America and Russia for nearly 5 per cent. each; the Argentine Republic, the Netherlands, and Belgium each took over 3 per cent.

It will thus be seen that our largest trade is with the United States, which is not only one of our best customers, but is also the source from which we derive a considerable share of our food-stuffs and raw materials, including a large proportion of the wheat we consume and most of the cotton we manufacture. Yet we import five times as much from it as we export to it. Next comes British India, to which we send manufactured cotton, and from which we obtain wheat, raw cotton, and many other natural products. Our pre-war trade with Continental countries was in the following order: Germany, France, Russia, Holland, Belgium. Our exports to them in the five years 1908-13 increased more rapidly than our imports from them.

About one-fifth of the trade of the United Kingdom is an entrepôt trade—that is, a trade in commodities imported for re-exportation. There is too little trade between many foreign countries to permit of a direct exchange of commodities between them. In such cases it is generally cheaper to use London as an

\* It must be noted that the trade of Central Europe passing through Belgium and Dutch ports is reckoned as trade with Belgium and the Netherlands.

entrepôt to which cargoes from various countries are consigned in vessels which reload in London with suitable cargoes.

**Commercial Advantages and Disadvantages of the British Isles.**—It has already been pointed out that the distribution of high and low land in the British Isles makes communication easy, except in the Highlands of Scotland. The productive centres are either near the coast or connected with it by navigable rivers whose great tidal estuaries admit ships of large tonnage to safe harbours. On the west coast of Great Britain, where most of the rivers are shorter, good natural harbours are numerous. Coastal navigation can be carried on uninterruptedly at all seasons. The British Isles are favourably situated for foreign trade. They lie facing two of the wealthiest continents, Europe and North America, and almost in the centre of the land hemisphere.

The climate is everywhere temperate, permitting work to be carried on all the year through. The humidity is sufficiently varied to permit of every kind of pastoral and agricultural occupation, as well as the most delicate textile operations, being successfully carried on.

The abundance of coal and iron has contributed to the pre-eminence of the United Kingdom in the modern industrial world. These minerals occur together near lime and clay, affording great advantages for iron manufacture. Shipbuilding naturally developed in the iron centres near the coast, and the British are still the greatest ocean carriers.

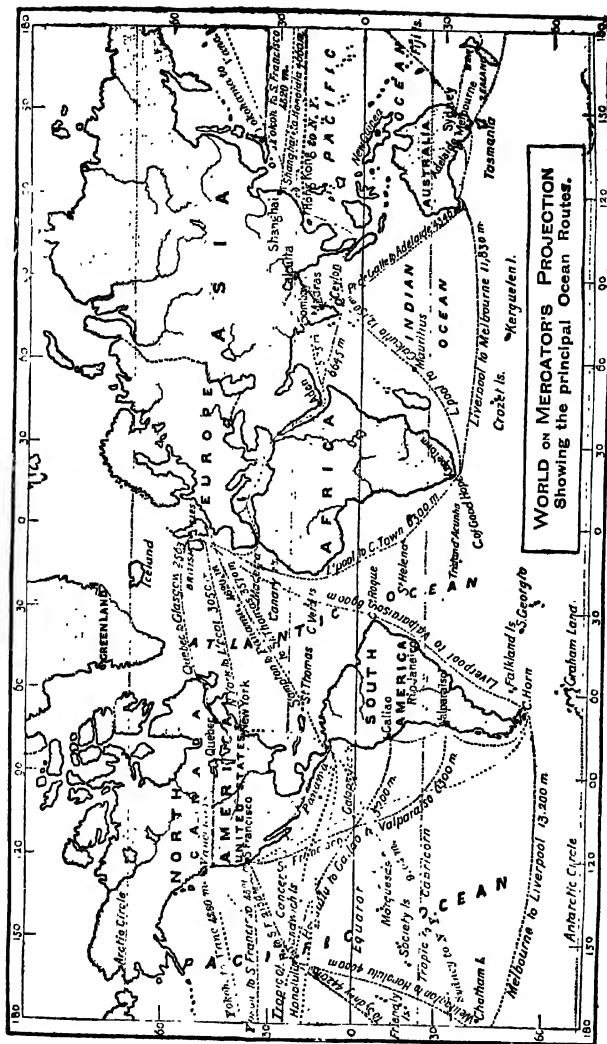
Besides these natural advantages, Britain has until recently spent little money in war for

many decades, nor are its working-men obliged to render compulsory military service, and thus, from an industrial point of view, waste three of their best years. Free-trade admits cheap food and raw materials from all parts of the world, and, before other nations began to compete, led to rapid industrial expansion. Home agriculture, however, was less favourably affected, and, owing to foreign competition, is not so flourishing as it should be.

Among the hindrances to our prosperity are heavy rents for land, high royalties on mines, and high transport rates, all adding to the cost of commodities. Still more serious drawbacks are our present educational system, which permits children to leave school too early, and a widely diffused indifference to education among the classes most in need of it. Agricultural depression, it has been said, is partly mental depression; and this is true of more than agriculture.

Much more might be made of our present resources. The problem of inland waterways must be seriously faced. Navigable rivers and canals all require to be widened and deepened. Almost unlimited water-power is available in mountainous regions for industrial purposes, while winds, and in many places tides, could also be subjugated to our needs.

Most extravagant of all is the incalculable waste of human capacity, which can only be remedied by a training which develops to the full the diverse capabilities of each individual, and inculcates in him an intelligent and sympathetic appreciation of the importance and utility of his work.



**Honolulu to Vancouver, 2419 miles.**  
**Honolulu to Panamá, 4711 miles.**

San Francisco to New York (via Cape Horn), 13,107 miles.  
 San Francisco to New York (via Panama), 5,259 miles.  
 Hong-kong to New York (via Panama), 11,836 miles.

# APPENDIX.

## STATISTICAL TABLES.

*Note.*—In all the tables, figures are given for the year 1913 (or for the group of years 1911–13) in order to show the course of industry and commerce under normal pre-war conditions.

### STATISTICS OF CROPS AND LIVE-STOCK, 1913.

	England. 1000 ac.	Wales. 1000 ac.	Scotland. 1000 ac.	Ireland. 1000 ac.	British Isles.* 1000 ac.
<b>TOTAL AREA OF LAND AND WATER.....</b>	<b>32,564</b>	<b>4,778</b>	<b>19,462</b>	<b>20,731</b>	<b>77,360</b>
<b>TOTAL ACREAGE UNDER CROPS AND GRASS.....</b>	<b>24,375</b>	<b>2,755</b>	<b>4,798</b>	<b>14,691</b>	<b>46,748</b>
<b>CORN CROPS—</b>					
Wheat.....	1,663	38	55	34	1,792
Barley.....	1,470	89	198	173	1,932
Oats.....	1,772	202	938	1,049	3,983
Rye.....	51	0·5	5	7	64
Peas and Beans.....	430	2	7	1	441
<b>Total Corn Crops ...</b>	<b>5,386</b>	<b>331</b>	<b>1,203</b>	<b>1,264</b>	<b>8,212</b>
<b>GREEN CROPS—</b>					
Potatoes .....	417	25	149	582	1,185
Turnips and Swedes..	997	56	432	277	1,770
Mangolds.....	409	10	2	79	501
<b>CLOVER, SAINFOIN, AND ROTATION GRASSES....</b>	<b>2,240</b>	<b>256</b>	<b>1,474</b>	<b>2,630</b>	<b>6,643</b>
<b>PERMANENT PASTURE....</b>	<b>14,012</b>	<b>2,058</b>	<b>1,496</b>	<b>9,712</b>	<b>27,309</b>
Hops.....	36	...	...	...	36
Small Fruit.....	76	1	7	16	100
	No. (1000).	No. (1000).	No. (1000).	No. (1000).	No. (1000).
<b>Horses.....</b>	<b>1,242</b>	<b>160</b>	<b>204</b>	<b>541</b>	<b>2,147</b>
<b>Cattle .....</b>	<b>4,991</b>	<b>726</b>	<b>1,247</b>	<b>4,933</b>	<b>11,937</b>
<b>Sheep.....</b>	<b>13,736</b>	<b>3,394</b>	<b>6,801</b>	<b>3,621</b>	<b>27,629</b>
<b>Pigs.....</b>	<b>1,912</b>	<b>191</b>	<b>132</b>	<b>1,060</b>	<b>3,306</b>

\* Including Isle of Man and Channel Isles.

## FISHERIES, MEAN ANNUAL YIELD, 1911-13.\*

England and Wales .....	753,000 tons, worth	£8,982,000
Scotland .....	406,000 " "	3,524,000
Ireland .....	42,000 " "	301,000
<hr/>		
Total .....	1,201,000 " "	£12,807,000
And including 'shellfish' .....		
		13,234,000

N.B.—Salmon are not included in this return.

## METALS EXTRACTED, 1913.\*

METALLIC MINERALS.	Minerals raised. 1000 tons.	Value. £1000.	Metals contained in the ores. 1000 tons.	Values of Metals. £1000.
Iron ore and pyrites.....	16,009	4,550	5,139	22,097
Tin ore (dressed) .....	8	960	5	1,081
Lead ore.....	24	294	18	342
Zinc ore.....	17	70	6	132
Copper ore .....	3	21	.4	31
Total value of metals from British ores.....				£23,699,277

## NON-METALLIC MINERALS EXTRACTED, 1913.\*

MINERALS.	1000 tons.	Value. £1000.	MINERALS.	1000 tons.	Value. £1000.
Coal .....	287,430	145,535	Gravel, sand ....	2,409	185
Clays.....	13,860	1,778	Gypsum .....	285	90
Granite, &c... ..	7,098	1,386	Barium (com- pounds).....	50	42
Limestone.....	12,741	1,369	Arsenic and ars. pyrites .....	2	17
Sandstone.....	3,977	1,143	Ochre, &c. ....	15	14
Slate .....	371	927	Others.....	162	41
Oil-shale.....	3,280	822	<hr/>		
Salt.....	2,248	609	Total.....		£154,171
Chalk.....	4,858	213			

\* From *Statesman's Year-Book*, 1915.

## COAL PRODUCTION, 1913.\*

DISTRICT.	1000 tons of coal.	DISTRICT.	1000 tons of coal.
ENGLAND—		England ( <i>continued</i> )—	
Durham .....	41,533	Other districts.....	15,324
Yorkshire.....	43,680	WALES—	
Lancashire.....	24,321	Glamorgan.....	38,033
Staffordshire.....	14,351	Other districts.....	6,929
Derbyshire.....	18,133	SCOTLAND—	
Northumberland.....	14,819	Lanarkshire.....	17,486
Monmouthshire.....	15,374	Other districts.....	24,970
Nottinghamshire. ....	12,394	IRELAND.....	83
Total, United Kingdom (1913), 287,430,473.			

## PRINCIPAL ARTICLES OF IMPORT.

## MEAN ANNUAL VALUE, 1911-13.

£1000.	£1000.
Grain and flour .....	83,254
Cotton, raw .....	73,987
Meat, including animals for food.....	51,849
Wool (sheep and lambs').....	33,480
Wood and timber.....	29,336
Sugar, raw and refined.....	24,935
Butter and margarine.....	24,347
Rubber.....	20,146
Fruits.....	15,716
Silk manufactures.....	14,304
Leather and manufactures	13,334
Hides and skins .....	13,298
Tea.....	13,297
Chemicals, dye-stuffs, &c.	12,293
Oil-seeds .....	10,493
Woollen manufactures and yarn.....	10,063
Eggs.....	8,651
Petroleum.....	7,964
Cheese .....	7,196
Tobacco.....	6,559
Wine.....	4,175
Metals—	
Copper (manufactured in whole or part).....	9,630
Iron ore. ....	6,240
Iron and steel and manufactures.....	13,109
Machinery.....	7,129
Motor-cars and parts.....	6,849
Lead (manufactured in whole or part).....	3,398
Tin (manufactured in whole or part).....	8,987

\* From *Statesman's Year-Book*, 1915.

## PRINCIPAL ARTICLES OF EXPORT (HOME PRODUCE).

MEAN ANNUAL VALUE, 1911-13.

£1000.	•	£1000.
Cotton manufactures.....106,047	Metals—	
" yarn ..... 15,630	Iron, pig and puddled ...	4,472
Total of cotton (in-	" tinned plates and	
cluding items not	sheets.....	6,964
detailed).....123,167	" galvanised.....	8,746
Woolen manufactures... 20,633	Total iron and steel	
" and worsted yarn 5,945	(including items	
Total of woollen and	not detailed).....	48,873
worsted (including	Hardware, cutlery, &c....	8,018
items not detailed)...34,191	Machinery.....	35,733
Linen manufactures..... 9,403	Coals, cinders, fuels, &c....	42,581
Apparel and haberdashery 15,323	Chemicals, dyes, colours, &c.	21,674
New ships..... 7,907	Railway carriages and	
	trucks, motor-cars, &c....	10,833

TOTAL TONNAGE ENTERED AND CLEARED BY  
PORTS, EXCLUDING THOSE COASTWISE, 1913.

1000 tons.	1000 tons.
London .....25,129	Dover..... 4,825
Liverpool (with Birken-	Middlesbro'..... 4,493
head).....23,263	Blyth..... 3,718
Cardiff .....18,065	Sunderland..... 3,601
Tyne ports .....15,716	Manchester..... 3,363
Southampton .....13,326	Leith..... 3,127
Hull ..... 9,056	Bristol ..... 2,663
Glasgow..... 7,905	Grangemouth..... 2,149
Plymouth..... 7,558	Methil..... 2,092
Cork ..... 7,454	Hartlepool..... 1,949
Grimsby..... 5,254	Harwich..... 1,908
Newport..... 4,904	Goole..... 1,527
Swansea..... 4,902	Burntisland..... 1,445

# TRADE OF THE UNITED KINGDOM WITH DIFFERENT COUNTRIES IN 1912 AND 1913.\*

COUNTRIES	Imports of Merchandise from		Exports of Produce and Manufactures of United Kingdom to	
	1912. £1000.	1913. £1000.	1912. £1000.	1913. £1000.
<b>BRITISH POSSESSIONS.</b>				
India.....	52,149	43,449	57,626	70,315
Australia.....	36,122	38,068	34,841	35,483
New Zealand.....	20,302	20,338	10,390	10,833
Canada.....	26,881	30,495	23,531	23,724
Newfoundland.....	855	974	738	891
South and East Africa†.....	12,464	13,566	23,529	24,450
Straits Settlements.....	14,972	15,804	5,039	5,831
Hong-kong.....	842	676	3,531	4,359
British West Indies.....	1,872	2,119	2,524	2,332
Ceylon.....	7,460	7,804	2,861	4,183
British Guiana.....	461	646	644	728
Channel Islands.....	1,779	1,984	1,336	1,353
West Africa.....	4,349	5,173	6,156	6,594
Malta.....	33	32	903	1,107
Mauritius.....	573	294	500	537
Cyprus.....	319	139	154	155
Aden.....	325	310	446	483
Federated Malay States.....	3,266	3,574	873	1,338
<b>Total, British Possessions (including those not detailed)</b>	<b>186,013</b>	<b>191,579</b>	<b>177,093</b>	<b>195,309</b>
<b>FOREIGN COUNTRIES.</b>				
United States.....	134,579	141,706	30,066	29,297
France.....	45,505	46,349	25,586	28,957
Germany.....	70,048	80,511	40,363	40,695
Holland.....	21,434	23,565	14,282	15,477
Belgium.....	23,616	23,385	12,193	13,263
Russia.....	40,539	40,275	13,738	18,116
Spain.....	14,552	14,389	6,887	7,892
Egypt‡.....	25,790	21,406	9,448	9,807
China.....	4,933	4,674	10,780	14,848
Brazil.....	9,360	10,064	12,658	12,461

\* From *Statesman's Year-Book*, 1914.

† Exclusive of about £10,000 worth of diamonds from the Cape Province.

‡ Now a British Protectorate.

COUNTRIES.	Imports of Merchandise from		Exports of Produce and Manufactures of United Kingdom to	
	1912. £1000.	1913. £1000.	1912. £1000.	1913. £1000.
<b>FOREIGN COUNTRIES (continued).</b>				
Italy.....	8,239	8,133	14,008	14,606
Sweden.....	13,236	14,214	7,137	8,233
Turkey.....	6,424	5,429	8,115	7,742
Switzerland.....	10,627	11,070	4,035	4,223
Argentina.....	40,808	42,498	20,550	22,627
Denmark.....	22,120	23,836	5,589	5,790
Portugal.....	2,831	3,018	3,032	3,273
Rómania.....	3,250	2,014	2,933	1,943
Chile.....	4,982	5,315	6,159	6,010
Japan.....	3,933	4,388	12,229	14,452
Norway.....	6,897	7,470	5,566	6,148
Java.....	5,129	2,089	5,151	5,713
Greece.....	2,172	2,143	2,569	2,538
Austria-Hungary.....	7,019	7,709	4,943	4,482
Peru.....	3,299	3,179	1,409	1,490
Central America.....	1,904	2,077	1,786	1,734
Uruguay.....	2,367	2,764	2,917	2,916
Canary Islands.....	1,354	1,549	1,746	1,672
Mexico.....	2,515	1,881	2,508	2,290
Cuba.....	2,548	3,677	2,553	2,174
Philippine Islands.....	2,159	2,183	1,112	983
Colombia.....	1,198	1,101	1,434	1,687
Venezuela.....	668	561	980	827
Algeria.....	1,403	1,318	987	1,341
Morocco.....	670	408	1,718	1,278
Ecuador.....	421	474	555	415
Bolivia.....	1,620	2,250	330	195
Hayti.....	811	269	348	327
Tunis.....	712	863	524	474
Persia.....	958	430	878	722
Siam.....	323	517	1,086	1,353
Bulgaria.....	491	67	1,002	472
Madagascar.....	231	222	67	87
French Indo-China.....	160	277	86	158
Total, Foreign Countries (in- cluding those not detailed)	558,627	577,455	310,131	330,152
Grand Total.....	744,640	769,034	487,224	525,461

## COMPARATIVE PRICES OF COMMODITIES, 1913.\*

COMMODITIES.	Mean, circa.	Minimum.	Maximum.
<b>MINERALS—</b>	<b>£ s. d.</b>	<b>£ s. d.</b>	<b>£ s. d.</b>
Iron, Cleveland No. 3.....per ton	8 2 6	2 14 9½	3 8 0
" Cleveland Bars..... "	8 12 0	8 5 0	8 18 0
" Steel Rails..... "	6 14 0	6 10 0	6 15 0
Coals, Best Wallsend,			
London..... "	1 1 6	1 1 6	1 1 6
Copper, Standard .....	70 13 0	63 10 0	73 0 0
Tin, Standard..... "	212 14 0	184 10 0	230 5 0
Lead, English Pig..... "	19 5 0	16 12 6	21 15 0
Saltpetre, Bengal.....per cwt.	1 1 0	1 1 0	1 1 0
<b>TEXTILE MATERIALS—</b>			
Cotton, Raw, Middling			
American.....per lb.	0 0 6·88	0 0 6·31	0 0 7·89
Yarn, 40's West .....	0 0 10½	0 0 9½	0 0 10½
Wool, South Down Hogs...per pk.	0 1 3½	0 1 2½	0 1 3½
" N. S. Wales Greasy,			
Average.....per lb.	0 1 2½	0 1 1½	0 1 2½
Silk, Blue Elephant..... "	0 10 9½	0 10 7½	0 11 4½
Flax, Riga ZK.....per ton	36 0 9	33 0 0	39 0 0
Hemp, Manila..... "	32 10 9	29 10 0	35 0 0
Jute, Native Firsts..... "	28 3 6	24 15 0	34 0 0
<b>FOOD PRODUCTS—</b>			
Wheat, N. Manitoba No. 1...per qr.	1 18 10	1 17 0	1 19 9
" British..... "	1 12 1	1 10 5	1 15 1
Bailey, " .....	1 8 1	1 4 1	1 11 6
Oats, " .....	0 19 11	0 17 10	1 1 8
Flour, Town Household...per 280 lb.	1 9 6½	1 8 6	1 10 6
Beef, inferior.....per 8 lb.	0 3 2	0 2 8	0 3 10
" prime..... "	0 5 4	0 5 0	0 5 6
Mutton, prime..... "	0 6 4½	0 6 0	0 7 0
Potatoes, Good English...per ton	4 6 4	3 12 6	4 15 0
Rice, Rangoon.....per cwt.	0 8 7½	0 7 6	0 9 10½
<b>FOR DRINKING, LIGHTING, &amp;c.—</b>			
Sugar, Beet.....per cwt.	0 9 6	0 9 3	0 9 11½
" West Indian Syrups "	0 13 9½	0 12 1½	0 15 9
Tea, Congou, common...per lb.	0 0 5	0 0 4½	0 0 5½
Coffee, Santos.....per cwt.	3 2 5½	2 11 0	3 12 9
Petroleum.....per 8 lb.	0 0 8½	0 0 8	0 0 8½
Tallow, Town.....per cwt.	1 14 4	1 13 6	1 15 9

\* Calculated for the year ending 4th Oct. 1913 from the list published by the *Economist*, 11th Oct. 1913. The reader will find a price-list of commodities in the *Economist* (price 8d.) He is recommended to buy a mid-month issue, as it contains a supplement giving monthly trade returns as well as prices.

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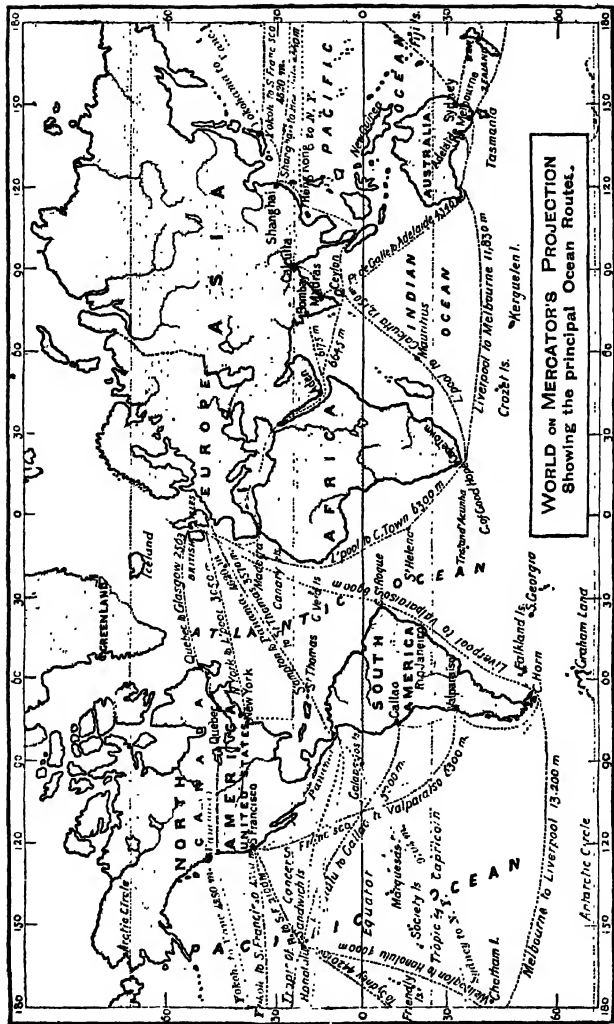
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Honolulu to Vancouver, 2419 miles.  
 Honolulu to Panamá, 4711 miles.

CHAMBERS'S COMMERCIAL HANDBOOKS

# COMMERCIAL GEOGRAPHY OF THE WORLD

PART II—OUTSIDE THE BRITISH ISLES

BY

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## PREFACE TO THE SECOND EDITION.

THE book has been thoroughly revised and the statistics brought up to date by Mr James Cossar, Lecturer in Geography, Glasgow Provincial Training College, to whom I am most grateful.

### EXTRACT FROM THE PREFACE TO THE FIRST EDITION.

In this short book it is impossible to treat the economic geography of every country in an exhaustive manner. Nor is it necessary. It is not important that the beginner should know all about every country. It is important that he should know the main facts about the most important and typical countries, and accordingly certain countries have been chosen for fuller treatment. Having thoroughly mastered the facts for one type of country, the student finds it easy to treat similar but unknown countries in like manner from the larger geographical and statistical hand-books. This personal compiling of economic geography of different countries by the student should be a marked feature in all advanced classes.

The book is divided into two parts—(1) General; (2) Regional. A word may be said about the arrangement of the regional descriptions. An attempt has been made to arrange the British lands beyond the seas so as to secure some educational continuity, which is lacking in the order of treatment usually adopted. The temperate states, which most resemble in their conditions those of the British Isles, are taken first, and the tropical lands last. The student confining his attention to the British Empire will find the plan of the book suits his requirements, for he has only to read straight on to the end of Chapter XIV. (omitting Chapter XI., which deals with the non-British temperate lands of the southern hemisphere, and some para-

graphs of Chapters XIII. and XIV.), and in addition the *Commercial Geography of the British Isles*.

Chapters XV. to the end discuss the economic geography of non-British civilised lands, beginning in the Far East, where modern industrial methods are in their initial phase, passing by Europe to America, where they have been most fully developed.

Chapters VIII.-XIV. give an account of the regions producing on the whole mainly raw materials, and the order adopted is from the better to the less known; Chapters XV. to the end deal with the countries with considerable or extensive industrial development, and the order is from the simpler to the more complex.

Statistics are given for purposes of illustration and not for memorising. Readers are strongly advised to supplement them by reference to the latest edition of the *Statesman's Year-Book*, the most complete of geographical statistical manuals, from which and from official reports the statistics in this book are taken; or failing that, to *Whitaker's Almanack*. Every teacher should himself use, and make his students familiar with, the methods of employing the more important blue-books and consular reports, which should be found in all free libraries. The daily newspaper should be scanned for new information—which, however, in many cases requires to be carefully tested before being fully accepted. *Commercial Intelligence* is practically indispensable both to students and teachers, and is very reliable. The *Board of Trade Journal*, which costs threepence per week, should be regularly consulted.

It is impossible to give a complete list of references to official publications and books of all kinds consulted in preparing the lectures on which the book is based. Valuable bibliographies will be found in Mrs Herbertson's *Descriptive Geographies from Original Sources*. Readers desiring fuller information are referred to *Chambers's Encyclopædia* and Chisholm's *Handbook of Commercial Geography*.

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# COMMERCIAL GEOGRAPHY OF THE WORLD

OUTSIDE THE BRITISH ISLES.

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## INTRODUCTION.

GEOGRAPHY deals with the distribution of things on the Earth's surface, Economics with the production, elaboration, exchange, and consumption of wealth. Economic Geography treats of the distribution on the Earth's surface of natural products of economic importance, and of the activities arising from their transportation, elaboration, and exchange. Economic geography has a twofold function. In the first place, it presents an accurate picture of the existing economic resources of the world; and in the second, it suggests ways in which these may be modified to the benefit of mankind. Tea, for example, which is gradually becoming the chief non-alcoholic drink of the world, will thrive on well-drained slopes receiving abundant showers, heat, and sunshine in summer, and it is hardy enough to bear a touch of winter frost. Wherever these conditions are combined, tea might, geographically speaking, be cultivated. Other considerations, however, come in. The economic conditions must also be suitable. Rent must be

reasonable, labour plentiful and cheap, and markets readily accessible.

Economic conditions are not necessarily unvarying. Thus, to take familiar instances, the application of steam-power to manufacture has altered the distribution of the great industrial centres, and concentrated population on the coal and iron fields. The development of electricity as a motive-power is increasing the economic importance of abundant water-power available for generating the current. Among economic factors, none perhaps is more important than density of population. So long as Australia was but sparsely inhabited, manufactures could not develop except on a small local scale. With the increase of population—that is, of possible purchasers—their development has begun.

Geographical conditions are fundamental and relatively unchanging. Climate, the chief geographic factor of economic importance, depends mainly on causes beyond human control. Indirectly, indeed, man can do something towards modifying its influence. The cutting down of the forests in the Mediterranean basin, though it cannot be said to have modified the Mediterranean climate, has appreciably diminished the fertility of large areas. Forests no longer check the heavy rains from gathering into torrents, which sweep the soil along with them, exposing bare, unfertile rock. Here man has played the spendthrift; elsewhere he has toiled to better purpose, draining the marsh, sinking wells in the desert, or introducing valuable plants and animals.

The task of economic geography is to select from the mass of geographic conditions those of economic

importance. In the chapters immediately following we shall consider the principal facts of the distribution of land and water, of plain and mountain, of climates and products, of populations and of their economic activities. After this has been done for the world in general, selected typical regions will be studied in greater detail, and their trade in the first decade of the twentieth century will be considered.

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## PART I.

### GENERAL ECONOMIC GEOGRAPHY.

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#### CHAPTER I.

##### LAND AND WATER.

**Proportions of Land and Water.**—Five-sevenths of the Earth's surface is covered by water, which, except for the fish of the shallow seas near the coasts, is almost unproductive. Until comparatively recent times the oceans have proved formidable barriers to commerce. Of the two-sevenths of the Earth's surface which consists of land, the greater part, as will be seen from the globe, is found in a hemisphere whose pole lies in the west of France, and the commercial centre of the land hemisphere, or land-centre, may be taken as coinciding approximately with the English Channel. Within this hemisphere nearly half of the surface consists of dry land, whereas

in the other half of the globe nine-tenths of the surface is covered with water.

**Routes radiating from the Land-Centre.**—The English Channel is the centre from which most of the great world-routes radiate, passing southward and westward across the Atlantic, or eastward by the Suez Canal. To the north the water-routes are blocked by ice-bound seas. Great land-routes have been built, the Great Siberian Railway to the east, and the Canadian Pacific and the other trans-continental lines of North America from the end of the northern transatlantic steamer-routes to the west. The Central American isthmus will in the near future be pierced by at least one canal, which will be the western equivalent of the Suez Canal.

**Land and Water Hemispheres.**—When we look at a globe on which the height of the land is shown, we observe that most of the land slopes towards the Atlantic, into which, or its bordering seas, the majority of the great rivers flow. The bulk of the lowlands of the world are therefore connected with the Atlantic. The Pacific Ocean, on the other hand, is bordered by lofty mountain-systems, which leave but a narrow coastal strip of lowland along that ocean, and cut it off from easy communication with the main mass of continental lowlands. This circumstance is of great economic importance. Not only is communication easier across lowlands than across mountains, but the lowland is also, as a rule, more productive and more populous. The Atlantic is, therefore, by far the most important ocean, as the most valuable lands from an economic point of view slope towards it.

Let us now look more closely at the configuration of each continent on a good contour map, or on a globe which shows relief.

**Europe** is deeply penetrated on all sides by sea, so that no part is far from the sea and its ameliorating influences.

The chief European seas are the North and Baltic Seas, the latter with the Gulfs of Finland and Bothnia, in the north; and the Mediterranean, with the Adriatic and Black Seas, in the south. The northern and southern seas present many contrasts.

The North and Baltic Seas lie in the midst of the lowlands, which converge towards them. A great part of these lowlands is fertile; communication across them is easy; and the North Sea rivers have tidal estuaries, which give ready access to waters which are shallow and rich in fish. On the other hand, the seas are stormy and often foggy, the shores of the Baltic are frozen in winter, and powerful ice-breaking steamers are required to keep the harbours open.

The Mediterranean is surrounded by lofty mountains, and only the north of the Black Sea skirts the European plains. The alluvial river-valleys and the deltas of its almost tideless waters are very fertile. With the exception of the Danube and the Rhone, the rivers are not of great importance as trade-routes. A mountain barrier on the north and a desert barrier on the south shut in the Mediterranean, which has a narrow exit to the Atlantic by the Strait of Gibraltar, and also, since the opening of the Suez Canal, to the Indian Ocean by the Red Sea.

**Asia** slopes to the north and to the east from a

central core of mountains, which rise from two to four miles above the sea, forming a practically impassable barrier lying east and west on both sides of the parallel of 35° N. The northern plain is extensive, and is drained by great rivers, which, however, are frozen in winter, and flow into the ice-bound Arctic Ocean. The Amur crosses a hillier land, but is also annually ice-bound. The Hwang-ho and Yangtse-kiang are the great rivers of the east. Both have formed rich alluvial regions. The Yangtse-kiang is navigable for ocean steamers for nearly one thousand miles. Much of the Indo-Gangetic plain, between the Deccan and the Himalayas, is equally rich. The festoons of islands which lie to the east and south-east of Asia are mountainous and volcanic. The fertility of the rich volcanic soil is intensified by the monsoonal climate (see page 24). In the island-dotted eastern seas navigation is easy, except for the dreaded typhoon at the change of monsoon, and has long been important.

**Australia** consists of a western plateau separated by central lowlands from the eastern mountains, which rise above a narrow coastal plain bordering the Pacific. For climatic reasons the eastern mountain region and coastal plain are the most productive and populous (see pages 81, 84, and 85).

The **Pacific** is dotted with numerous island groups, of volcanic or coral origin, often fertile, but of no great extent. New Zealand and New Caledonia, which will be considered with Australia, are the most important islands in the south.

The **New World** turns, as it were, its back to the Pacific. Mountains border the Pacific coast of both

North and South America from north to south, except at the isthmuses of Panamá and Tehuantepec.

**South America** contains a great central lowland, between the Andes in the west and the Brazil and Guiana highlands in the east. It is drained by three mighty river-systems—the Plate, the Amazon, and the Orinoco—to the Atlantic. These rivers and their chief tributaries are navigable almost to their sources. A tidal bore occurs in the Amazon, and is dangerous to navigation.

Volcanic and limestone rocks, some of coral origin, predominate in the **West Indies** and **Central America**. The volcanic regions are fertile. The West Indies belong to the Atlantic region. In Central America, however, the Pacific slope is the most productive part.

In **North America**, as in South America, a vast lowland stretches east from the western mountain barrier. This is easily penetrated from the Atlantic by the great rivers Mississippi-Missouri and St Lawrence, which drain the centre and south of the great plains. The utility of the Mississippi is diminished by the shallowness of the distributaries crossing the delta. The St Lawrence is frozen in winter. It is connected with a great chain of lakes—Superior, Michigan, Huron, Erie, and Ontario. Below the last-named are rapids, and above it the great falls of Niagara. Both obstructions have been avoided by canals. The Hudson, though small in comparison with the Mississippi or the St Lawrence, is exceedingly important, for it makes a break in the eastern or Appalachian highlands, and affords a waterway to the St Lawrence system from the ice-free port of New York at its mouth. The Nelson and Mackenzie systems have the

same disabilities as the Siberian rivers, flowing to oceans frozen many months annually, and being themselves ice-bound in winter. The rivers flowing to the Pacific are of greater consequence than the corresponding rivers of South America, but are not very important as routes to the interior, except the Yukon in the far north-west.

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## CHAPTER II.

### CLIMATE BELTS.

THE climates of the world determine the economic regions. Plants and animals are more closely dependent on climate than man, who penetrates to most parts of the world. Yet even man cannot live in health and perform arduous labour in regions where the climate is too extreme.

**Elements of Climate.**—The chief elements of climate are heat and moisture. Sunshine and wind are next in importance.

The heat at the Earth's surface is derived from the Sun's radiations. These pass through the atmosphere without material diminution, but are arrested by land or water. But for modifying local influences, the total number of hours of bright **sunshine** is theoretically the same at all parts of the globe, though their distribution throughout the year varies greatly in different regions. Between the tropics it is possible to have twelve, or nearly twelve, hours of sunshine every day; at the poles the year consists of a single long day and a single long night, all the sunshine being concentrated into the day—that is, the summer

six months. Mountains greatly diminish the hours of bright sunshine in the valleys, and the presence of fog or cloud lessens the quality of the light. There is also a considerable difference in different regions in the amount of solar radiations arrested by a square mile of the Earth's surface; and a surface sloping towards the Sun is better situated than one sloping in the opposite direction. Hence in Germany and France the southern slopes are planted with vines; in the south of Australia, the northern slopes.

**Heat Belts.**—At the equator the rays fall almost vertically at all seasons, forming the hot belts, where it is never cold. At the poles they fall more nearly horizontally, forming the cold belts, where the soil for the greater part, or even the whole, of the year is frozen. Between the hot and cold belts lie the temperate belts—consisting of two warm temperate belts where the mean annual temperature is over, and two cool temperate belts where it is under, 50° F. The temperate belts are the best-cultivated and the most densely peopled regions of the world; but the hot belt is that in which vegetation attains its greatest luxuriance. The cold belts are frozen deserts. The limits of the cold belts may be traced by drawing lines (isotherms) through places where the mean temperature of the warmest month does not rise above 50° F., which is necessary for the cultivation of cereals. The limits of the hot belt may be traced by drawing lines through places where the mean temperature of the coldest month is 65° F., which is high enough for continual growth if there is a sufficient supply of moisture.

Temperature falls very rapidly with altitude ( $1^{\circ}$  F. every 300 feet). Mountains, therefore, pass through various heat zones. Even in the hot belt, mountains of sufficient altitude have eternal snow on their upper slopes. A mountainous land in temperate or tropical latitudes has greater variations of temperature than a plain in the same latitudes.

**Wind Regions.**—The winds are of great economic importance, especially on and near the ocean. They may determine the wet or dry weather on which the growth or maturation of plants depends, and which regulates the flow of the rivers. They directly control the movements of sailing-vessels, and to a certain extent even of steamers. They also indirectly affect them through the surface currents of the ocean, which are driven by the winds.

The regions of calms approximately coincide with the equator, the tropics, and the polar circles. The doldrums, or calms of the equator, used to be greatly dreaded in days when ships depended entirely upon their sails. The tropical regions of calms are known as the horse latitudes.

Between the equatorial and tropical calms are the zones of steady or trade winds, which blow constantly from the north-east in the northern, and from the south-east in the southern, hemisphere. In these two zones, however, certain lands near the equator have alternately north-east and south-west winds in the northern, and alternately south-east and north-west winds in the southern, hemisphere. These winds are monsoon winds.

Between the tropical and polar calms are the belts of stormy westerly winds, which in the southern

hemisphere are known as the brave west winds of the roaring forties. Here the winds are not constant, but variable; winds from a westerly direction, however, predominate.

The courses of sailing-ships, and to a certain extent those of steamers, are planned so as to take full advantage of favourable, and to avoid adverse, winds. A ship sailing southward from the English Channel keeps near the west coast until it feels the influence of the north-east trade-winds, before which it scuds towards Brazil. It skirts the eastern coast of South America, making use of the Brazil current until near the horse latitudes, and then turns westward and takes advantage of the brave west winds in the South Atlantic and Indian Oceans if its destination is Australasia. A ship returning from Australasia does not come back in the opposite direction, but sails still eastward with the west winds across the Pacific, and enters the Atlantic round Cape Horn, makes for the eastern coast of the South Atlantic, utilises the south-east trades, crosses the north-east trade belt near the western side of the ocean, where the current flows northward, and traverses the North Atlantic to the Channel before the stormy west winds.

**Rain Regions.**—In most regions rain falls most abundantly in summer, when the heated air can contain the greatest quantity of water as vapour and tends to ascend to cooler regions, where the vapour is condensed. Equatorial regions, which have perpetual summer, are the rainiest in the world. The seasonal variations which characterise other regions are almost entirely absent, though there are short dry

periods, or rather breaks, when the Sun is overhead at the tropics.

North and south of the equatorial belt, extending from about  $10^{\circ}$  to  $20^{\circ}$ , there are two seasons in a year, the wet when the Sun is exactly or nearly overhead at noon, and the dry during the rest of the year. The Sudan and the monsoonal regions lie in this area. They are warm at all seasons, and the rainy season almost coincides with the hottest period of the year. In the case of India and south-eastern and eastern Asia the summer winds blow over the ocean, and become abundantly laden with moisture, causing torrential summer rains, and the region of alternate rainy summers and dry winters extends to much higher latitudes.

Dry deserts are found round both tropics in the centre and west of the continents. In the case of some, as, for example, the desert of Sahara in Africa, or the Australian deserts, the winds blow from cooler to warmer regions and mainly over land. They therefore contain little moisture, and do not readily part with what they have. Other deserts, like Tarym and Gobi in Asia, are surrounded by mountains which arrest the rain.

Temperate coastal regions, in latitudes higher than about  $40^{\circ}$ – $45^{\circ}$ , where westerly storm-winds prevail, have rain at all seasons, but especially in winter, when the winds are strongest and the land towards which they blow is coldest.

Regions like the Mediterranean, California, central Chile, the south-west of Cape Colony and of Western Australia and Victoria, lie in the dry area in summer, and in the moist west-wind area in winter. The

combination of mild wet winters and hot dry summers leads to very special economic characteristics.

Up to a certain height, which varies in different parts of the world, mountains receive more rain than the lands at their base. A cloud-belt is found girdling most lofty mountains, in which it is always damp. Above this belt the precipitation steadily diminishes.

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### CHAPTER III.

#### ZONES OF LIFE.

CORRESPONDING to the climatic belts are equally well-defined zones of plant and animal life, for climate controls the great divisions, while differences of soil determine merely secondary divisions, of the world of life.

**Tundra.**—The surface of parts of the frozen deserts thaws in summer. Water accumulates in the hollows, forming a marshy land known as the tundra. Reindeer moss, the food of the reindeer, is the only plant of economic importance. The dog and the reindeer have been domesticated by the inhabitants, who are partly pastoral, and partly hunters and fishers. They wander northwards in summer, and southwards in winter, towards the confines of the forest, to hunt fur-bearing animals such as the sable and the lynx, or larger game such as the stag and the elk.

**Temperate Forests.**—Except where the rainfall is too small, the cool belt is forested. The forest belt stretches across the northern hemisphere between 50° and 60° N., in eastern Asia crossing the arctic

circle, in central Asia having its southern limit at  $55^{\circ}$  N. In the east both of the Old and New Worlds it skirts the coast, and gradually becomes more and more tropical in character. In the southern hemisphere, Tasmania, New Zealand, and southern Chile are covered with temperate woods. The trees are conifers in drier or colder regions, and deciduous in wetter or warmer regions. Conifers predominate on the polar border of the forest, the interior, and the upper mountain-slopes; deciduous trees on the equatorial border and nearer the coasts. Many of the trees yield excellent timber. Among the pines, white, yellow, and red woods, and pitch-pine from the North American or European forests, are more used in buildings than any other wood. Conifers also yield resin and turpentine. The chief deciduous trees are the oak, beech, ash, walnut, maple, and hickory.

**Clearings in Temperate Forests.**—Much of the agricultural land of temperate regions is found where forests have been cleared, as in our own islands and most of western Europe. On the equatorial and oceanic borders of the temperate forests the hardier cereals flourish, such as oats, rye, barley, and wheat. Of these the hardiest is barley, which grows both farther north and farther south than the others. Oats and rye grow best in the cooler, wheat in the warmer areas of this belt, which afford the warm and comparatively dry summers necessary for ripening that grain. Potatoes, turnips, and beet are the chief root-crops, and flax and hemp the principal industrial plants. All kinds of vegetables, such as carrots, onions, peas, beans, cabbage, &c., are successfully cultivated. Fruit-trees do best in regions where the

summers are late and the early part of autumn is dry. The chief fruits are the cherry, apple, pear, and plum; the gooseberry, raspberry, blackberry, and currant; and smaller plants, such as the strawberry.

Rich grasses, which yield excellent hay, are among the most important temperate crops. On the plains they grow luxuriantly in meadows near the streams, and in the troughs of the valleys. Grasses also clothe the upper slopes of mountains above the tree-limit, and below the more barren area in which heather and bracken are interspersed with peat-bogs. Sheep thrive especially well on mountain and upland pastures, but are also kept in lowland meadows. Cattle and horses do better on lowland pastures. Pigs, poultry, and other animals are also domesticated in many parts. Few wild animals still remain in the forests of the settled region. Stags, foxes, and fur-bearing animals are hunted in the wilder parts.

The south temperate forests are denser than the northern ones, which they resemble in most characteristics. They cover a much smaller area, and have been exploited only in comparatively recent times. Fruits, timber, and, in the case of New Zealand, gum from the Kauri pine are the chief economic products of regions still forested, and sheep of the grass-lands.

The north temperate forests and their clearings are thus self-supporting regions, supplying all the needs of life. The uncleared forests have but few inhabitants. The clearings support a great number, in some of the richer agricultural lands more than two hundred per square mile. On the whole the density increases from pole to equator, and from the interior towards the coast.

**Steppes or Temperate Grass-lands.** — Grass-lands cover vast areas on the equatorial side of the temperate forests. In the Old World they extend from Hungary to Manchuria, between 35° and 50°, occasionally reaching as far north as 55° N. In the New World they lie between the Mississippi and the Rocky Mountains south of 55° N., and also cover much of the land east of the Andes and south of the Plate estuary.

The steppes have scorching summers and severe winters, with relatively little rain, which falls only in summer. The grass rushes up in the spring to more than a man's height, and is shrivelled up and often burned before winter. The most fertile tracts of steppe-land are on the forest side. The equatorial side of the steppe gradually merges in the desert. The steppes support innumerable flocks and herds, sheep and goats, cattle and horses, and, on the confines of the desert, camels. Milk, cheese, and wool are the chief products of commercial value, in exchange for which the steppe-dwellers, who are nomadic or semi-nomadic in the Old World, obtain tea and such manufactured articles as they require.

The steppes lend themselves readily to economic development. The constant decay of successive crops of grass forms an abundant supply of rich vegetable mould, which renders the soil exceedingly fertile. Where the rainfall is sufficient and the inhabitants have enough skill and energy to engage in agriculture, heavy crops can be obtained. The wheat of Hungary and southern Russia, and of the Dakotas and Manitoba, is grown on steppe-land. As the virgin soil becomes exhausted, rotation of crops is introduced, and mixed farming and stock-rearing are also carried on.

With the spread of agriculture the density of population increases, and with it commercial possibilities. The farmers of the steppe find it profitable to grow grain for the market as well as for home consumption, and the development of steppe cultivation has been rapid since modern means of communication provided a cheap ready means of placing produce on the market.

**Warm Temperate Forests with Winter Rains.**—The Mediterranean type of climate—hot dry summers and mild winters, with the heaviest rain early and late in the season—gives rise to a Mediterranean type of vegetation, whose distribution has already been noted (see page 24). The resting period of this vegetation is not in winter, as in our own country, but during the dry summer. The leaves of most plants are tough and evergreen, and thorny aromatic plants abound. Cork and evergreen oaks, cedar, and pines of various species are valuable either for their bark or timber; the mulberry is grown for its leaves, on which the silkworm feeds; and a very large number of fruits, which the dry, warm summer brings to perfection, are cultivated. Among these are the chestnut, walnut, acorn (furnishing valonia), carob (furnishing the locust-pod), olive, orange, lemon, fig, pomegranate, almond, apricot, and peach; but the most important of all is the vine. Barley and wheat are cultivated, but are not suited to the climate so well as maize. Even rice can be grown in the well-watered alluvial river flood-plains and deltas.

Except on the mountain-sides, grass requires careful irrigation. Sheep are driven to the mountains in summer, and to the plains in winter. Cattle, which

are not numerous, are used as draught animals rather than for supplying milk. Goats and donkeys are proportionally more numerous, and horses less so, than in the forest clearings. In general, animals which live in drier conditions and need less succulent food are more numerous.

The valleys and coasts are agricultural; the mountains and plateaus are pastoral. The former are densely, the latter sparsely peopled. Commerce is chiefly in agricultural produce, such as the olive, the orange, and the produce of the vine, which are much in demand, and which require climatic conditions found only in a relatively limited area.

**Warm Temperate Forests with Summer Rains.**—The warm temperate forest regions have a dry and cool or cold winter, which forms a resting period. They cover the eastern portions of the continents on the polar sides of the tropics to about forty degrees, and are in the monsoonal rainy regions north of the tropics in Asia, and in the normal trade-wind rainy regions elsewhere.

The great heat and moisture of summer promote the rapid growth of plants, whose leaves, many of which are evergreen, and timber are on the whole more valuable than their fruits; although fruits, especially of a succulent sort, are common. Rice, the most important cereal, is grown on all low-lying lands that can be flooded. Inferior varieties flourish on terraced mountain-sides. Wheat and millet are both cultivated. All kinds of citrons—oranges, lemons, &c.—flourish. Mulberries, many of which are planted as shade-trees, feed large numbers of silkworms. Tea is the characteristic plant of eastern Asia. It has been grown

with success in Natal, and could probably be cultivated in other regions with a similar climate. In South America it is replaced by *maté*, or Paraguay tea. Many valuable timber-trees are used locally. Cedars are imported from North America for making pencils, and Eucalyptus from Australia for paving. Turpentine is obtained from the pines of the eastern United States. The bamboo can be used for food, for clothing, for building, for drainage, and indeed for almost every conceivable purpose. Eucalyptus, castor-oil, and croton trees yield oil. Hemp is grown both for oil and fibres. Cotton, by far the most important textile plant, flourishes in this region, especially in North America, where the sea-island variety of the coastal swamps is long, strong, and fine. The ramie or China grass, a great nettle, yields what is perhaps the silkiest and strongest of vegetable fibres, and one which will be used more and more as improvements are made in the processes of preparing it for spinning. In China a laurel is used for making paper, and ginseng, opium, and other drugs are cultivated, as well as tobacco, which is grown in all parts. Many of these plants require careful cultivation. Agriculture is more carefully and laboriously carried on in eastern Asia than anywhere else in the world. The flood-plains and deltas of the great rivers Hwang and Yangtse are naturally very fertile, and the crops are greatly increased by elaborate methods of irrigation. Domestic animals are few, the pig, dog, and poultry being the most important. Population is very dense; in many provinces of China the number is over four hundred to the square mile. Notwithstanding this density, the

methods employed in manufactures are of an antiquated type.

The North and South American, South African, and Australian regions of this character are not nearly so thickly peopled, but in comparison with regions farther west in the same latitudes the population is dense. Most of the more laborious work is done by negroes, Indian coolies, or Polynesians, under European overseers. The higher lands, where the more temperate climate is suited to vegetation belonging to higher latitudes, especially in the lee of the mountains where the rainfall is lower, can be cultivated by Europeans.

**The Dry Deserts** are deserts for want of rain, and not from natural infertility. On the contrary, the soil is exceedingly fertile wherever irrigation is possible. The growth of date-palms, vegetables, cereals (maize, wheat, and millet), and pulses is restricted to the few oases, whither water is carried underground from some wadi, or where a spring exists. Acacias and other gum-yielding trees, frankincense, myrrh, and other spices grow in specially favoured spots. The richest lands are those where water is available, as, for instance, along the Nile or Euphrates; or where artesian wells have been sunk, as in southern Algeria, western Queensland, and parts of the western United States near the poorer grass-lands. Cotton, pulses, and cereals are among the products of Egypt, Turan, and Mesopotamia. In irrigated regions, such as Mildura and Renmark in Australia, fruits of all kinds flourish, more particularly Mediterranean species.

The desert is very sparsely inhabited. On the poor pastures at its edge goats and camels are kept.

In the desert itself caravan-driving is the chief occupation of all who are not settled in the oases. Gums, dates, and hides are the chief products, but commerce will long be small except in the favoured strips of fertile land flooded by the great rivers.

**Savanas or Tropical Grass-lands.**—On the equatorial side of the deserts, where the single rainy season of summer becomes marked, vegetation increases, and rich grass-lands intersected by tree-bordered streams predominate. These are savanas, which are distinguished from steppes by having hot instead of cold winters. Savanas are also found throughout inter-tropical lands above the lowlands. They can be traced in Central America and in the West Indies, in the llanos, campos, and catingas of South America, and also in the northern part of the pampas. They form a complete ring outside the Congo basin and the Kalahari Desert in Africa, which has therefore a certain unity from the southern veld to the park-lands of Uganda and the Senegal. Tropical grass-lands are also found in southern Asia and Persia, in the Deccan, on the uplands of the Malay Peninsula and Archipelago, and in the northern part of Australia.

In Africa herds of big game still wander about many parts of the savana, but the cattle-keeping races are gradually encroaching from both north and south. In America and Australia stock-farmers occupy many thousand square miles. The first step towards the exploitation of the savanas is the keeping of sheep and goats on the drier, and of cattle on the wetter parts. This will probably always be the most important occupation on the fringe of savana nearest to the desert. The savana, however, on the other side gradually

passes into dense tropical forest. This richer region is capable of very intense cultivation, and is already cultivated by the native tribes. Banana palms and coffee shrubs are the typical economic plants. Millet, and in Africa maize, on the higher lands, rice on the moister lowlands, especially of the East Indies, sugarcane in all parts, and cotton are the chief crops. Coffee is widely grown.

Europeans cannot endure hard manual work in tropical savana and forest lands without suffering greatly in health, and hard work is at present left, and probably will long be, to the native races. The economic possibilities of those lands are great, but as yet they are comparatively little developed.

**The Equatorial Forests** are always hot and moist. Rain falls at most seasons, but most abundantly when the noonday sun is overhead. Equatorial forests of the densest description cover the lowlands within fifteen degrees of the equator, and near the east coast extend to higher latitudes. They contain many valuable timber-trees, such as mahogany, ebony, and ironwood. The oil-palm is the most important tree in the African region. The coco-nut palm flourishes round the coast, especially of coral islands. Its dried kernels form the copra of commerce. The sago-palm is characteristic of the Malayan region, and mandioca or manioc, from which tapioca is made, of the South American one. Rubber and caoutchouc are tapped from innumerable lianas that wind about the forest-trees. Spices abound, such as cloves in Zanzibar and Pemba, and allspice, nutmeg, and cinnamon in the Moluccas and other eastern islands. The banana grows rapidly from cuttings planted in forest clearings.

Coffee and cacao flourish on the hill-slopes, the latter at higher elevations than the former. Neither can stand frost, and both require much heat, but are usually protected from direct sunshine by planting shade-yielding trees. Coffee is widely distributed, and may be grown throughout the forest and savana areas where sufficiently moist. Cacao, while cultivated a little in Ceylon and Java, is grown mainly in Ecuador and Brazil, in the West Indies (especially Trinidad), and in the Portuguese island of San Thomé, in the Gulf of Guinea. Cotton and sugar-cane are important crops on the lowlands.

The unhealthiness of the tropical forests is the chief drawback to their exploitation. When first cleared the forest becomes even more unhealthy than before, but afterwards grows less noxious. Even the scanty inhabitants are not proof against the climate.

Ivory, long the chief trade in the African forests, is still playing a great part in the opening up of the Congo, and is inextricably associated with the slave-trade, which is not yet quite suppressed in Central Africa.

The resources of the vast intertropical regions are as yet hardly tapped, and constitute a most valuable reserve which will be exploited as means of transport are improved, routes are opened up, and the pressure of economic needs becomes greater.\*

\* See *Commercial Geography of the British Isles*, Chaps. VI. and VII., where the distribution of economic products imported into Great Britain is given under each product.

## CHAPTER IV.

## MINERALS.

THE distribution of minerals cannot, like that of vegetation, be considered in a series of zones.

**Coal**, the only important mineral of organic origin, is very widely distributed, but is not at present found or used in any quantity between the tropics. This may be explained partly by our ignorance of the mineral wealth of many tropical lands, and it may also be that equatorial conditions do not favour the production of coal, which is composed of highly compressed vegetation, reduced to almost pure carbon by the removal of most of the oxygen and other gases, as well as of the water. At present most coal is worked between 35° and 57° N. in the United States, the United Kingdom, and the German Empire, but coal-mining is becoming increasingly important in all parts of the world, from Spitsbergen to New Zealand, from China to Chile, and from Klondike to Natal. Three kinds of coal are found—common black or bituminous coal, anthracite, and brown coal or lignite. Anthracite gives off no flame when it burns, most of the inflammable gases having been distilled from it. When this process is carried still further, graphite (plumbago or black-lead) is formed, which is plentiful in Siberia and Ceylon. Brown coal or lignite is vegetation less consolidated than in coal. Peat is a carbonised mixture of marsh plants.

**Petroleum**, mineral or rock oil, is formed by the slow distillation of organic matter in the rocks. In some

places this rises to the surface ; elsewhere it forms reservoirs, which can be pumped up by boring the overlying strata. It is abundant in Pennsylvania and surrounding states in North America, the eastern Caucasus, Galicia, Hungary, Romania, Burma, Sumatra, Japan, Peru, Canada, California, and many other localities.

**Paraffin-oil** and **wax** are extracted from bituminous shales in Scotland, France, and New South Wales.

**Asphalt**, or pitch, found in the Pitch Lake, Trinidad, as well as near the Dead Sea and in several parts of Europe, is used for paving and as a damp-proof material. The Val de Travers asphalt, extensively used for paving, is a bituminous limestone found in Switzerland.

A large number of the rocks composing the earth's surface are used as **building-stones**, especially those which are durable and easily quarried. Soft **clays** are fired into bricks. Clays of special fineness are used for making porcelain—e.g. kaolin, a decomposed granite.

**Common Salt** (sodium chloride) is found as a solid on parts of the surface of the land, and in solution in seawater, from which it is extracted by evaporation, or, in very cold regions, by freezing. It is the only mineral used as food, and is so valuable that in some countries it is made a government monopoly—e.g. in India. In a solid form it is found (*a*) efflorescent in dry regions such as the salt deserts of Iran or Turan, or of the Great Basin of the North American Cordilleras, and round lakes with no outlet, where evaporation is at least as rapid as the inflow of fresh water, such as Lake Eyre in Australia ; (*b*) as rock-salt, usually accompanied by sulphate of lime, especially in triassic rock. as in the

Salt Range of India, so called from its deposits of salt ; and (c) in underground deposits, from which it is obtained by pumping water into a small mine, allowing it to become saturated, and then pumping it out and evaporating it. Brine-springs are found in many parts. The older rocks contain no salt, the original deposits having probably been washed out in the course of ages. In much of Africa it is practically non-existent, and is so valuable as to be used for money.

The **metals**, the most valuable of the minerals, are found mainly in igneous and crystalline rocks, unlike the preceding, which are found in stratified rocks. Most metals are found as ores, either pure or in combination with others. They occur (a) in regions which have been disturbed by crustal movements, the veins of ore lying in fissures in which it was deposited in solution ; (b) in volcanic regions. They are rare in undisturbed rocks, and consequently the great alluvial plains of the world are poor in minerals.

**Iron**, by far the most important metal, is very widely distributed in different forms. The black or magnetic oxide, which is richest in iron, is found in central and northern Sweden, the Urals, Canada, Pennsylvania ; red hæmatite, consisting of more than two-thirds of iron, is found as kidney ore in the north of Spain, in the Furness district of Lancashire, and as crystalline specular ore in the island of Elba. Brown hæmatite is similar in composition to the red, with a larger proportion of water, and is the most important ore of South Wales, Antrim, France, and Germany. Spathic iron ore, a carbonate of iron, forms the famous iron mountains, the Erzberg, in Styria. The same carbonate

in an impure form occurs in the clayband and black-band ironstones common in Britain.

The ironfields most worked are either near coal, as in Britain and Pennsylvania, or near the sea, by which ore can be cheaply transported to coal, as in Spain and Sweden.

**Tin** is less liable to decompose than iron, and is therefore largely used for covering iron to form tin-plate. Tinstone (or cassiterite, a binocide of tin) is found abundantly in the Malay Peninsula and islands, and in Bolivia, Australia, and Tasmania.

**Copper** is rapidly growing in importance with the developments of electricity, as it forms an admirable conductor. The pure metal is found in Russia and near Lake Superior. There are numerous ores, which are mined in south-west Spain, Germany, the United States, Mexico, Chile, South Africa, Queensland, New South Wales, South Australia, Japan, and the Congo.

**Zinc** is a bluish-white metal used for plumbing and other purposes, and, in combination with copper, for making brass. It is found as blende (sulphide of zinc) in the United Kingdom, the United States, and Australia, and as calamine (carbonate of zinc) on the borders of Belgium and Prussia, in Upper Silesia, northern Spain, and the United States.

**Nickel** is a bright metal which possesses great strength and malleability, and does not readily tarnish. It is alloyed with steel to strengthen it, and many articles are nickel-plated to preserve them from rust. It is found in combination with magnesia in New Caledonia, and in combination with copper pyrites near Lake Superior.

**Manganese** is chiefly found as black manganese, a

binoxide. It is used to colour glass purple, and as an alloy in making strong steel.

**Aluminium** is light, very strong and hard, and always remains white. In recent years it has been much used in making torpedo-boats and bicycles. It is usually obtained by electrolysis from a clay called bauxite, found at Baux in France, and in the north of Ireland, or from cryolite, a mineral found in Greenland; the electric power being often derived from waterfalls, such as those of Niagara, Schaffhausen, and Foyers.

**Lead**, chiefly used for plumbing purposes, is extracted from galena (the sulphide), which is usually associated with some other metal, often silver, which it also pays to extract. Galena is found in most countries with old rocks, and is extensively produced in the United States, Spain, Germany, Mexico, Australia, and the United Kingdom.

**Mercury** is a liquid metal greatly used for making amalgams of other metals. It is found as cinnabar (the sulphide), from which vermilion is obtained, at New Almaden in California, Almaden in Spain, and Idria in Austria. It is much used in modern gold-mining and in medicine.

**Silver** is very ductile and malleable, and takes a beautiful polish. It is much used for table articles, ornaments, and coins, as well as for electro-plating, but it tarnishes very readily in the presence of even minute quantities of sulphur.

Native silver is found in Nevada, Mexico, Peru, and Chile, and at Kongsberg in Norway. Half the silver annually produced is obtained from silver-lead ores. There are a great many ores containing sufficient silver, especially in the form of sulphides and chlorides,

to repay extraction. The world supply of silver has greatly increased since 1850; the mean annual production (1901-10) exceeded £48,000,000.

Gold is heavy, ductile, constant in colour, and so malleable that it can be beaten out into leaves  $\frac{1}{250000}$  of an inch thick. It is used for coins, for plating all kinds of ornaments, and for gilding. It is found in all rocks in all lands, in rivers, glacial and sea sands and gravels, as well as in the ocean waters. The alluvial or 'placer' gold is isolated by a series of washings, which float off the lighter materials, leaving the heavier gold as a residuum. In recent years much gold has been obtained from quartz-veins. In regions where means of transport are well developed it is profitable to extract the gold when an ounce can be obtained from a ton of quartz. This is done by crushing the ore, then washing it like alluvial gold, or extracting it by amalgamation.

Gold is abundant, and very widely distributed. It is exceptionally abundant in the western Cordilleras of North America as far north as Alaska, in the mountains east and south of Siberia, in South Africa, in Australia, the Urals, and Hungary.

After the exhaustion of the then known placer-mines, the annual production of gold sank in 1881-90 to about £22,000,000 per annum. Since 1890 it has steadily risen again, and the mean for the five years 1907-11 was £91,500,000.

Platinum, the third heaviest metal, resembles gold in most of its properties. It is much rarer, and is principally obtained from the Urals. It is used for making chemical and electrical apparatus and in photography.

## CHAPTER V.

## MANUFACTURING AREAS.

SOME kind of manufacture is carried on by almost every people, and among many a special taste and skill are developed which give their work local or even world-wide fame. Thus China has become noted for its silks, embroidery, pottery, &c.; Japan for beautiful textiles and pictures, pottery, lacquer, and bric-à-brac of all kinds; India for finely carved ivory, rich inlays, brass-work, and fine textiles, such as the world-famous shawls of Kashnir. The work is manufactured in a literal sense—that is to say, made by hand, with a care and skill which gives it great beauty and durability. The increased demand which results from the opening of foreign markets has led to greatly increased production at the expense of quality, and to the degeneration of once artistic manufactures.

In the Western industrial world manufacturing has come to mean making by machinery, which at the present time is generally driven by steam. A machine turns out with great rapidity a large number of articles, which, however, are inferior in durability, and are marked by a uniformity which is inferior in artistic value, to the variety introduced by the living hand. This monotonous uniformity may perhaps become less universal if the more general use of electricity leads to the setting up of small motors to do the necessary mechanical work for the master crafts-

man, who nevertheless personally inspires and directs every operation.

At the present time it is roughly true that Asia produces handwork, but is in a state of transition, and that Europe and North America are in the mechanical stage. In the other continents the manufactures are not yet of much commercial importance.

The distribution of manufacturing areas, in the narrower sense, depends on a variety of conditions, of which the chief are: (1) easy access to raw material, which may be either (*a*) locally produced or (*b*) readily and cheaply obtainable; (2) available source of power, of which the commonest are (*a*) coal, for supplying steam-power, or (*b*) water, for supplying water or electric power; (3) abundant and not too costly labour; (4) ready access to markets, which may be (*a*) home or (*b*) foreign, or both. Of these conditions the second is the most essential, it being generally less costly and difficult to bring raw material to the source of power than to bring the source of power to raw material. Where all the conditions are fulfilled, as in our own island country, the industrial outlook is in the highest degree favourable.

Up to the present time it has been commonly stated that the presence of coal is the first essential for industrial development. In this rough generalisation there is much truth, as may be seen by considering the relation between the distribution of manufactures and the distribution of coalfields. In the case of Britain this has already been described (*Commercial Geography of the British Isles*, Chap. IV.).

The Franco-Belgian coalfield supplies fuel for the woollen, linen, glass, and steel factories of north-east France and Belgium. The Westphalian field yields coal for the iron, cotton, and silk manufactures carried on east of the Rhine, and for the woollen manufactures carried on west of that river. The Saxon, Silesian, Polish, and south Russian coalfields all produce coal which is applied to industrial purposes. Cotton, woollen, and linen are the chief textiles manufactured, and iron is the chief mineral industry.

Similarly, in the eastern United States, the Appalachian coalfield supports Pittsburg and many other manufacturing centres. There are, however, a great number of manufacturing centres which depend not on abundant coal, but on abundant water-power, which at the present time is chiefly used for generating electricity, the motive-power of the future. In Europe the best example is Switzerland, where coal is absent and water-power is abundant. In the United States the presence of coal has created the Allegheny industrial region. Water-power, on the other hand, in the New England Highlands and also along what is known as the Appalachian fall-line, has determined the site of the New England textile towns and the rapidly growing cotton-factories of the cotton-growing states.

## CHAPTER VI.

## TRANSPORT.

HITHERTO we have but incidentally referred to the movement of produce from place to place. The study of this movement constitutes that branch of economic geography which is properly termed commercial geography, and forms its most dramatic chapter. This movement is partly determined by human needs and partly by facilities of transport. The development of transport enlarges the supplies and desires of man, so that we may say that as a rule increase of commerce and development of easy means of communication proceed hand in hand.

The means of transportation are very numerous, and differ in different parts of the globe. The chief methods are (1) porters; (2) baggage-animals; (3) draught animals; (4) mechanical propulsion, utilising (*a*) wind and current, (*b*) steam-power or other source of energy depending upon heat, or (*c*) electric energy.

Human beings are the most expensive agents of transportation, as they must not merely be fed, but in most cases paid as well, while their carrying power is relatively small. Human transport cannot be employed unless the route lies through fertile regions, where food is easily obtained, for a porter cannot carry his food as well as his load for any length of time. It is resorted to chiefly where no roads but footpaths exist, or under such special conditions as those in intertropical Africa, where the tsetse fly is a fatal enemy to horses and cattle.

The use of pack-animals, though more satisfactory, leaves much to be desired, both in the weight carried and the cost of transporting it. The food problem becomes an important one, especially in infertile regions. Narrow tracks are the characteristic roadways of regions where pack-animals are used, and this mode of transport is commonest in mountainous or densely wooded countries.

Among the animals used for carrying baggage are the yak in the cold snowy regions of Tibet; the llama in the Andes; the camel across the arid desert and the poor steppes which border it; the horse, mule, or donkey mainly in temperate lands.

With the introduction of a wagon which can be drawn, the transporting power of animals becomes very much greater, but the quantity which can be carried and the rate of transport largely depend on the nature of the roads. Over the roadless karroos of South Africa the ox-wagon is the chief means of transport beyond the railway; but in countries where roads exist horses are most commonly employed for haulage.

In the nineteenth century mechanical traction by means of steam-engines was gradually extended over great areas, chiefly in the temperate zone. This has proved a cheaper and more rapid means of transport on land than any other. The chief disadvantage is the preliminary outlay involved in surveying and constructing a carefully made permanent way with slight gradients. Expensive engineering works have been necessary, especially in mountainous districts, where innumerable ravines have to be bridged, and where the road has often to be tunnelled for long

distances through the solid rock. Europe and North America are now traversed by many lines of railway, and India, Japan, and the southern temperate lands have been opened up by them. The building of trans-continental lines has been of great economic importance. The first across America, the Union Pacific, was opened in 1869, the Canadian Pacific in 1885, and with the dawn of the twentieth century the Siberian Railway began to convey passengers across Eurasia from the Atlantic to the Pacific.

The use of electric and other motors is rapidly extending, and tends to replace horse haulage in streets and on roads.

A similar revolution has taken place in facilities of transport by water. A fertile country with a navigable river has always had the advantage of possessing a great natural route. On large rivers, the current can be utilised in descending, but oars and sails, and haulage by men or animals, are still used to propel boats up-stream. On the Amazon the constant up-stream wind blows the craft up the river. On the Yangtse-kiang the boats are hauled up the rapids above Ichang.

The advantage of water transport is great, for much larger quantities can be carried in boats than in wagons. This has led to the construction of canals for navigation, of which the Imperial Canal of China, seven hundred miles long, constructed in the seventh century, is one of the most remarkable. Canals must be level, and until locks were invented in the fifteenth century, they could not be built across very uneven ground without immense excavations. Just before the introduction of railways the canal system

was rapidly extended in our country to facilitate the transport of passengers and goods. Canals are greatly used for inland navigation, especially on the Continent, at the present day; and it is a matter of national importance that our canal system should be reorganised and extended.

The most recent developments of canals are connected with ocean navigation, and consist of (*a*) isthmian canals and (*b*) inland canals. The isthmian canals have been cut to save long detours, and are large enough to permit great ocean steamers to pass through them. The most famous is that of Suez, one hundred miles long, which shortens the journey from England to Bombay by sea by some 4500 miles. Smaller ones cross the isthmus of Corinth and that at the south of Schleswig-Holstein. The central American isthmus has been cut for a canal at Panamá. A ship-canal should be cut across the isthmus between the Forth and Clyde to permit more direct communication between many North Sea and all Baltic ports and the ports of the northern United States and southern Canada. The isthmus of Kra will perhaps be pierced to shorten the sea-route from India to the Far East.

The inland canals are too numerous to mention in detail. A simple form of canalisation is to dredge a river and regulate its outflow by dikes. Glasgow was thus converted into a port. In recent years canals have been excavated across the land to make Manchester a seaport, to permit large vessels to pass directly to Amsterdam from the North Sea at IJmuiden, and to avoid Niagara Falls and other obstacles on the St Lawrence system of waterways,

the most remarkable inland navigable tract in the world.

Coasting traffic has been important from the earliest historic times in the eastern Mediterranean and south-eastern Asia. Oars and sails were used before the application of the steam-engine to the propulsion of vessels revolutionised navigation. Larger and larger ships are now being built, and the speed of many of these great vessels is marvellous. The quicker Atlantic liners travel over twenty-three sea-miles per hour. Steamers ply between the chief ports of the world, and have largely replaced sailing-vessels.

For the development of over-sea commerce proper land communications are necessary. (1) There must be harbours where vessels can easily and safely load and unload. These may be natural or artificial. Of the natural harbours, landlocked inlets, island-protected shores, and river estuaries are the most important. The last are exceptionally valuable where the tide regularly rises and falls and permits vessels to sail some distance inland. (2) Behind the harbours must be a productive land. Many of the finest natural harbours in the world, especially on fiord coasts, are of no economic value at present, owing to their having no *economic hinterland*, except where minerals exist in the mountains which rise above them. The economic value of many hinterlands will rise in value with the increased use of water-power for generating electricity. Harbours where the hinterland is a fertile alluvial plain (e.g. Tientsin), a great river-basin where the chief streams are navigable (Rotterdam, Le Havre), or a busy industrial region (Liverpool), are the most important.

The importance of a particular port may wax or wane. We have already mentioned the tendency for the port to be located as near the heart of the industrial region as possible (e.g. Manchester, Houston in Texas, Montreal, Duluth, or Chicago replacing Quebec), so as to take the utmost advantage of the cheaper and more commodious ship transport. The other change is the rise of ports as near the land's end as possible (Le Havre, Rimouski) for the transference of passengers, mails, and goods which require to be transported with the maximum speed.

The economic conditions of the world to-day present a great contrast to those of a century ago, owing to the marvellous expansion of cheap and rapid means of communication. In the past, as in some parts of the world at the present, facilities of communication could scarcely be said to exist. Transport was slow, difficult, and dear. It costs 10d. per ton per mile to transport coal on the backs of donkeys in north-east China. Mr Chisholm states that before the opening of the railway it cost nearly 2½d. per ton per mile to carry coal from Kilmarnock to Troon or Irvine in carts; and that it costs from ½d. to 1d. per ton per mile to carry coal by train in England, and very much less in the United States. It costs only about ⅓d. per ton per mile to carry building-stone across the Atlantic.

This cheapening of transport has revolutionised the commerce of the world. In olden times it was not possible to obtain any articles from distant places except those whose intrinsic value was high relatively to their bulk. Thus precious stones, silks, and spices were brought from the East, and gave rise to those exaggerated ideas of the wealth of the Indies, which

stimulated the great discoverers of new routes overseas. Now food-stuffs, raw materials such as wool, and minerals such as coal and iron ore, of relatively little value per unit mass, are freely transported.

Another stage in the growth of commercial relations between the most distant parts of the Earth has resulted from the introduction of methods of preserving perishable goods, by refrigeration, rarefaction, &c. This has greatly increased the available food-supply of densely peopled industrial regions dependent on outside sources for sustenance, and permitted their continuous expansion. It has also led to a growth of trade between tropical and temperate lands which is of great economic significance. The moist tropical regions so prolific of plant life may be made to yield a food-supply immeasurably greater than required by the present population of the world, especially if, as some authorities predict, sugar-yielding foods obtained from fruits gradually become of greater importance than starch-yielding foods derived from cereals, obtained mainly from temperate regions.

The interdependence of mankind has been greatly increased by the development of transport facilities. The intercourse of mankind has also been promoted, not merely by the transference of material commodities, but through the interchange of ideas by means of the telegraph and the telephone, which permit almost instantaneous communication of thought. Wires connect all the great centres of the world, many passing along the beds of the oceans; and it is now possible to transmit messages over immense distances by means of wireless telegraphy.

## CHAPTER VII.

## ECONOMIC MAN.

**Man as a Producer of Wealth.**—In the first four chapters the fundamental distributions with which man has to deal were discussed. In many regions man can live on the spontaneous productions of the earth; but where he relies on these alone, where only hunters and fishers live, the population is scanty. Man must produce as well as destroy, and the modern economic world, with which we have to deal in this book, is composed mainly of producers of wealth. Breeders of stock and cultivators of the ground use the reproductive powers of animals and plants to replenish and increase their stock and produce. They are limited in their distribution by the climate and life-zones described in Chapters II. and III. The manufacturer elaborates crude products into more useful articles. Without easy transport his sphere of influence is local; but with the use of mechanical power in manufacture and transport it may become world-wide.

A volume could profitably be written on the subject of this chapter, a subject not sufficiently considered in many courses on commercial geography. Only three aspects of it can be examined here, and these in the briefest way: (1) the effect of material surroundings on the intensity of man's work; (2) the influence of man's thought and ingenuity in increasing his productive powers; and (3) the effect of human associations in promoting and hindering economic, and especially commercial, expansion.

(1) **Varying Intensity of Human Activity due to Material Surroundings.**—In calculating the cost of production the intensity of human activity, manual and mental, must be taken into account. Climate and food are two of the most important factors. Education we will consider under another heading. The efficiency of the negro in Africa is much less than that of the white man in Europe. This is not merely a matter of racial difference, nor even a matter of easy satisfaction of the essential wants of food and shelter. The damp heat of the equatorial jungles is extremely enervating; the colder air of our continent is much more stimulating. The northern races in the northern hemisphere are, speaking generally, more energetic than the southern ones, and this is probably due to the influence of cold, which compels action to ensure warmth. To the invigorating effect of winter is due the contrast between the intense activity of the Chinaman relatively to that of the Hindu, in regions where the summer climates closely resemble each other. We can eliminate racial differences by considering the output of an Irish labourer at home and in the United States; and, indeed, contrast generally the greater initiative and energy of the North American of the centre and east compared with his brothers of the same stock in western Europe. It is worth noting that the climatic conditions where the European stock seem to attain their most intense activity are somewhat similar to those where the Asiatic people are most energetic.

A sufficient supply of nourishing food is another factor which is often neglected. The following

account of a contractor's experience in Jamaica is an excellent illustration of the importance of this factor. An American contractor building a railway in Jamaica found Jamaica negro labour excessively dear at one shilling a day, and that Alabama negroes did ten times as much ; but a Jamaican negro who secured American food increased in strength until he was as good as the Alabama negroes (see R. T. Hill, *Cuba and Porto Rico*, p. 228).

(2) **Increase of Human Productive Powers due to Increased Thought and Ingenuity.**—It is less necessary to insist on the importance of mental training for economic progress, but it is needful to point out that mental alertness in practical affairs is obtained through dealing with concrete problems. A scientific training is essential for the economic man, who has to deal with the concrete facts of the world. The knowledge of natural phenomena and the development of modern labour-saving methods have grown together.

It is unnecessary to recapitulate these advances here—from the securing of proper shelter and food to the latest developments of wireless telegraphy, experiments in fertilisers of the soil, or attempts to make unhealthy areas healthy. All have a profound economic significance, commonly recognised in the case of mechanical improvements, but too often neglected in the case of biological advances.

We may briefly classify the more important of these applications of human thought and ingenuity as follows:

(a) Attempts to increase the natural productiveness of the soil directly by improved drainage and watering, food-supply (fertilisers), and the wider effects

of foresting and disforesting; as well as the more specialised attempts to secure ideal conditions by the use of glass-houses for plants.

(b) Efforts to secure more useful species of plants and animals by breeding as well as by feeding.

(c) The numerous devices for transforming raw products, animal, plant, and mineral, into manufactured articles by the use of machinery and natural forces.

(d) The special application of these mechanical devices to improved means of communication, either by transference of commodities or of thought.

(3) **Economic Influence of Human Associations.**—This would naturally lead us to consider the different groups of men and their economic efficiency, and the gradual economic transformation that is taking place within each at the present day, which is a subject for an advanced work on economic geography. In the present book we may cite one or two cases of the immediate economic effects of the occupation of a region by a group of men of higher or lower economic efficiency.

For instance, the western plains of Canada and the grass-lands on the southern margin of the Siberian forests were used only by a comparatively few wandering tribes until towards the close of the nineteenth century. With the building of the Canadian Pacific and Siberian Railways a great influx of farmers has taken place, who have settled on farms near the lines, which bring them many necessities of life, as well as not a few luxuries; and along which they can send the produce of their fields to markets in densely peopled urban centres. The potentialities of this agricultural development existed in these

regions in the days of the wandering Red Indians and Kirghiz, but these tribes were not in a sufficiently advanced state of civilisation to utilise them; they have been pushed aside by a more highly developed people who could. Of course, such changes have taken place both in the past and in the present without the potent aid of modern mechanical means of transport. In Manchuria the nomadic pastoral Manchus have given way before the industrious Chinese farmers, who now form by far the greater part of the population of this prosperous province. This, however, has not affected the world's commerce as the settlement of the plains of North America has done. We may find the converse of this in Mesopotamia, where a flourishing agricultural civilisation has been overthrown by pastoral conquerors, and a fertile land temporarily turned into a wilderness. Retrogression is not unknown in the world's history.

In intertropical lands other aspects of recent transformations due to the intervention of a higher economic civilisation can be seen in parts of Africa, where railways have been built, plantations formed, and the fruitful land made to yield not merely enough to supply the modest needs of the relatively few inhabitants, but produce of many kinds sought for by the complex civilisations of temperate lands. The initiative and supervision in this case also have come from Europeans or their descendants. Here the native is not displaced, for he alone can healthily perform the necessary manual labour; but his work is organised by the European, who also ensures the peace without which sound economic progress is impossible, whether in equatorial or temperate lands.

Finally, we have to mention the influence of political groupings and policies in the economic world. With few, and these not perfect, exceptions, political boundaries are barriers to economic circulation—(a) through the tariffs imposed on many commodities crossing them; (b) through the different languages, customs, weights and measures, and monetary systems, which in many cases hamper exchanges. The extension of such boundaries promotes expansion of trade. The unification of the German Empire has been a potent factor in its economic development. The internal freedom of trade over an area yielding nearly every kind of produce is of first importance in the economic expansion of the United States of America. The policy of Free Trade has been an important factor in the growth of the foreign trade of the United Kingdom to the largest in the world; and the fact that the greater and more compact natural resources of so vast a country as the United States will undoubtedly in time deprive us of the first place need not affect the bulk of our trade, nor is it an argument against the soundness of our policy. The ideally healthiest community from an economic point of view is that which makes the most of its own resources for its own wants, and permits the freest interchange with other communities. Differences in weights, measures, and coinages are unnecessary restrictions; while tariffs must be regarded as temporary expedients, which in some cases may promote local economic development.

## PART II.

### REGIONAL ECONOMIC GEOGRAPHY.\*

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#### CHAPTER VIII.

#### BRITISH NORTH AMERICA : CANADA AND NEWFOUNDLAND.

##### Physical Conditions.

**Configuration.**—The separation of Canada from the rest of North America is purely artificial, but a variety of causes have combined to favour its independent existence. The most important are the great estuary of the St Lawrence, the Great Lakes and other navigable waterways to which it is the eastern entrance, and the fact that the rugged and forested eastern highlands of North America south of the St Lawrence acted, before the construction of railways, as natural barriers, difficult to cross except by two narrow passages up the Hudson and Potomac. Canada consists of the St Lawrence basin, with a great area of wooded hilly land to the north, and of vast grassy, forested, or frozen plains to the west, whither until recent years only the fur-trader penetrated. Beyond the plains are the western Cordilleras, a barrier so formidable that, before the construction of the interoceanic Canadian Pacific Railway (C.P.R.),

\* The reasons for adopting the following order in the treatment of the Regions of the World are given in the Preface.

communication between east and west was easier by the long voyage round Cape Horn than over the high passes of the Rocky Mountains and the Selkirks.

Economically, as well as physically, Canada consists of three great physical divisions—(1) the mountainous west, (2) the plains of the centre, and (3) the uplands of the east—and in each we have to distinguish between the more temperate south and the colder north.

The **Western Region** is a sea of mountains, forming a great climatic barrier. Three ranges are of special importance—the Northern or Canadian Cascades, which border the coast and arrest much of the rain from the ocean; the Gold Ranges, rich in minerals, in the centre; and the loftier eastern Rocky Mountains, which rise like a huge rampart above the central plains. Except the south of Vancouver Island, all this part of Canada lies north of latitude 49° N., approximately that of Jersey and Paris. Lying in the west of the continent, it is in the track of the westerly storm-winds, and the climate of southern British Columbia may be compared to that of southern England or Ireland. The temperature is never very high nor very low, except in the inland valleys. On the western slopes of the northern Cascades, and on the higher and more exposed western slopes of the inland ranges, the rainfall is very great (about sixty inches a year), especially in winter; but on the lower eastern slopes and in sheltered valleys it is very low (under ten inches a year). British Columbia has, therefore, a great variety of climates. From the mild moist coasts to the snow-covered summits of the mountains, most of the land is densely forested,

leaving only the narrow flood-plains of the rivers available for cultivation. These rivers are the Fraser, Upper Columbia, and its tributary the Kootenay, which here and there form long, narrow lakes where the steep-sided valley slightly widens and flattens. The northern part of this western region is loftier. The St Elias or Sea Alps rise 18,000 or 19,000 feet above the coast, but the inland mountains are lower. The coastal region is always bleak and wet, but the interior is much drier, though extremely cold in winter, and only moderately warm in summer. It is ill fitted for cultivation, and produces only a low scrub. It is drained by the upper waters of the Yukon, known as the Lewes and Pelly Rivers.

The Great Plains gradually descend from the slopes of the Rocky Mountains to the east. They are crossed by many sluggish rivers, and are fed by the snows of the mountains. The surface is broken by low morainic heights, which here and there dam the rivers, causing them to expand into great lakes. The climate is one of extreme temperatures—cold in winter, hot in summer in the south, though, of course, cool in the north. The rainfall is low, and mainly in summer. The cereal crops derive their moisture in spring, not from showers, but from the thawing water in the soil, which has been frozen hard during the severe winter. The dry and warm chinook or föehn winds, known sometimes by the expressive name of 'snow-eaters,' blow in the west from over the Rockies in spring, causing the rapid disappearance of the snow from the surface, and allowing of early grazing.

The forest belt runs diagonally across the plain from south-east to north-west, with grass-land to the south-west, and to the north and north-east the icy desert, or tundra, including the Barren Lands.

**East Canada** consists of the Laurentian uplands, north of the Great Lakes and the St Lawrence, and the north-eastern part of the Appalachians, including the northern part of the New England highlands and the uplands of Nova Scotia, to which may be added those of the colony of Newfoundland. The climate, while neither so extreme in temperature nor so dry as that of the plains, is still much less mild and wet than that of British Columbia. In the Lake peninsula, in the latitudes of Rome and Turin, the summer temperature is high, and the rainfall is uniform and moderate at all seasons. The east coast is much wetter, with less marked extremes of climate. The waters round the edge of the Gulf of St Lawrence are frozen in winter, but the eastern and southern coasts of Nova Scotia and New Brunswick are not ice-bound. The Labrador Highlands have a very severe climate, and are at present of little economic importance, except for fur-hunters.

### **Economic Products.**

The natural wealth of British North America is very great. Fish abound in its sea and river waters; fur-bearing animals are still numerous on the edge of the tundra and in the forests, which also yield valuable timber; the dry grass-lands of the plains make

fine ranching-grounds, while minerals\* are very widely distributed.

**Fisheries.**—The eastern sea-fisheries are the most important in the world. The shallow waters south of Newfoundland and east of Nova Scotia, in the Gulf of St Lawrence and the Bay of Fundy, and off the Labrador coast are the feeding-grounds of innumerable fish. Cod, halibut, mackerel, and herring are caught on the Banks, and lobsters and oysters round the coasts, especially off Prince Edward Island. The populous centres of eastern North America form markets for a portion of this harvest. The surplus fish are either salted (cod), or canned (lobsters), or packed in ice and sent to Europe and the West Indies. Seal and whale fishing is carried on in summer in ships which sail from St John's, Newfoundland.

The valuable sea-fisheries in the western sounds and fiords, where Prince Rupert is now an important centre, include herring, black cod, and halibut. But the river (fresh-water) fisheries are here more important than sea-fisheries. Salmon, which are caught in vast quantities as they rush up the Fraser, Columbia, and Skeena Rivers in great shoals, making for the spawning-grounds, are largely canned for export.

Most of the Canadian rivers abound in trout and other fish. The Great Lakes contain lake-trout, salmon, herring, black bass, and many other species, which are sent in ice to the large cities of the interior.

**Furs.**—The northern forests are the home of many animals whose thick, furry coats protect them against the inclement winter. The fur-trade has been important for centuries, and still continues to be so. The Hudson Bay Company, formed to trade in valuable

furs, was formerly sovereign over much of the Dominion, but is now only a great trading company. The fur-traders, many of them French or British half-breeds, penetrate the great North-west, and either trap the animals or buy their skins from the red men. Through these fur-traders much of the interior has come to be known.

**Lumber.**—The great forests of Canada produce excellent timber in immense quantities. Pines yield the most valuable timber, but much of excellent quality is obtained from hard-wood trees such as maple, beech, ash, oak, and birch. Lumbering is carried on in winter, when the frost has hardened the marshes, and the snow furnishes a uniform hard surface over which it is easy to drag the logs to the nearest river. In the following spring these logs are formed into rafts, carried down by the flooded rivers, rowed across the lakes, and deposited finally at saw-mills, which are usually built where water-power can be obtained from neighbouring falls, and where, in addition, railways or ships are at hand to carry away the sawn timber. The Ottawa and the St John are the busiest timber rivers in Canada. At the towns of Ottawa, Hull, and St John lumber is sawn and manufactured into furniture and into agricultural and other implements, or transformed into pulp for paper-making.

In British Columbia the tall Douglas or Oregon pines and cedars are cut and sent across the Pacific as far as Australia, and are even brought to Europe.

**Ranching.**—The rainfall in many parts of the plains of the far west is too low to permit cultivation without irrigation. In the drier parts of south Alberta the grass grows in isolated tufts. The climate in winter,

however, is 'so mild that stock can be allowed to run at large, and the prairie grasses, gradually cured by the autumn chinooks, are as good food for cattle as they were for buffalo.

'Since 1894 more than 150,000 acres within the "arid regions" have received irrigation, so that in numerous cases the rancher, who had to import the grain he required from Manitoba, now raises it for himself, or saves the freight by purchasing it near at hand.'

**Farming.**—Agriculture is the most important occupation. With the opening of the railways across the western plains it has become possible to send farm products to market, as well as to carry settlers to new centres of cultivation. Thousands of square miles are now under cultivation, and the area of arable land is increasing yearly. Nevertheless, vast districts of the North-west are still unbroken by the plough.

Wheat is the cereal most cultivated, especially in the rich soils of the old lake basin known as the Red River Valley of Manitoba. The grain is sown in April and harvested in August, when it is thrashed and stored in an elevator close to the railway, ready to be transported to the Great Lakes for shipment to Europe. Mixed farming is extending in Alberta and Saskatchewan. In the east, where wheat-growing was formerly important, farmers can no longer compete with the settlers on the virgin soil of the west, and little grain is now grown except as food for stock. Dairy and poultry farming is found to pay better, and butter, cheese, and eggs, as well as chickens and turkeys, are exported, preserved when necessary by means of cold storage.

The district round the Bay of Fundy, protected from strong and cold winds, is a great apple-growing region. The Lake peninsula, in the latitude of northern Italy, is famous for its fruits—apples, pears, plums, peaches, apricots, grapes, and many small fruits. Large quantities are sent to the big cities by express fruit-trains, and the surplus is preserved.

**Minerals.**—Canada is rich in minerals, both useful and precious. In the east, Nova Scotia is the most important mineral region, yielding some gold, but being more noted for coal and iron. The richest mineral region of Canada is in the western mountains, where nearly all the precious and useful minerals are found. In the middle of the nineteenth century, when the gold rush took place to the Rocky Mountains, many miners penetrated into the Cariboo district, where they found alluvial gold. This placer gold, as it is called, is still mined, especially on the Omineca, Fraser, and Quesnel Rivers, and in the Klondike district. In the last-named district the soil is frozen most of the year, and has to be thawed before it can be washed and the gold extracted.

In other parts of Canada gold is obtained from rocks, of which it forms but a small percentage. If an ounce of gold occurs in a ton of rock, it pays to crush the rock and extract the gold, provided routes exist by which machinery and food can be easily brought to the mining centre. The most important of the quartz gold-mining regions are: (1) West Kootenay, in the south of British Columbia, where Rossland, on the Columbia River, has grown with the development of the mines; (2) the Dease Lake district, in the north of British Columbia; (3)

the Rainy River district of Ontario; and (4) Nova Scotia.

Silver-lead is found in a wide area to the north of Kootenay Lake, round Thunder Bay, and to the west of Lake Tamiskaming, where Cobalt is one of the richest silver-camps in the world. Nickel is found at Sudbury, in Ontario, north of Georgian Bay. The mines here are among the most valuable in the world. Copper, usually associated with silver, is widely distributed in British Columbia (the Kootenay and Cariboo districts, and on Vancouver and Queen Charlotte's Islands); it is also found along the shores of Lakes Huron and Superior, and on the south side of the St Lawrence. Asbestos is the chief mineral in Quebec, which possesses some of the most valuable deposits in the world.

Canada is exceptionally well provided with useful minerals; their development awaits the extension of transport facilities. Excluding the undeveloped areas of the far north, Canada has nearly 100,000 square miles of coalfields. These may be arranged in four groups—(a) Eastern, (b) North-west Territories, (c) Rocky Mountains, and (d) Pacific Coast.

The coalfields of Nova Scotia, which furnish about 60 per cent. of the Canadian output, are associated with valuable deposits of iron. At Sydney and Inverness, on Cape Breton Island, the shafts of the mines are close to the shore, and the under-sea coal is worked. In the treeless western plains brown coal, or lignite, is widely distributed, especially in the Souris River district, in Saskatchewan, and at Edmonton, in Alberta. At the last-named place and in the Bow River valley valuable deposits of bituminous

coal occur. Canmore coal is employed on the British Columbia section of the Canadian Pacific Railway, and has been tested for use in the United States navy, with satisfactory results. In recent years important coalfields have been opened up in the Crow's Nest Pass in the Rocky Mountains, across which a railway now passes to the Kootenay district, where the coal, which luckily yields good coke, is used for smelting. Extensive deposits are now being worked in the Brazeau River district. The Rocky Mountains also contain anthracite of good quality, found at Anthracite, on the Canadian Pacific Railway. Vancouver Island is one of the few coal-producing regions of the eastern Pacific, and large quantities are exported from the mines at Comox, Nanaimo, Ladysmith, and Wellington to the western United States, as well as for navy and steamship consumption. Anthracite occurs on Vancouver and Queen Charlotte's Islands.

There is no available coal in Quebec and Ontario, but compensation for this is found in the abundant water-power that can be utilised for electrical energy, and in the extensive stores of crude oil and natural gas of south-west Ontario, especially in the Tilbury district. The north-western provinces possess enormous deposits of asphalt.

Coal, charcoal, and water-power ('white coal') are used in smelting Canadian iron ores. The leading iron regions are (1) Texada Island, and the vicinity of Victoria and of Quatsino Sound, Vancouver Island; (2) the Atikokan deposits, sixty miles west of Port Arthur, where the ores are smelted; (3) the Moose Mountain district, from which the ores are sent by rail to Key Harbour, on Georgian Bay, and then

shipped to Toronto and Cleveland; (4) the ores of eastern Ontario, to the north of Port Kingston; (5) the deposits of Nova Scotia, which promise to make this province one of the great iron-producing regions of the world.

Large ironworks have been established at Sydney, Cape Breton Island, where the ore is brought to the coalfield from Bell Island, in Conception Bay, Newfoundland, and on the mainland at Pictou, New Glasgow, Londonderry, and Truro, where local iron is smelted with local coal. Steel as well as iron is now manufactured in Ontario, at the Sault Sainte Marie Falls, between Lakes Superior and Huron, and at Hamilton and Midland.

**Manufactures.**—The principal manufactures of Canada are the elaboration of food products, the making of agricultural machinery and transport material, the manufacture of paper, the weaving of cloth, and the incipient working in metals just mentioned. Except for textiles, india-rubber, and cane-sugar, Canada supplies the raw materials for its manufactures, a circumstance which in some measure determines their character. Most of them have already been referred to in the section dealing with natural resources.

Fish-canning on the Fraser River; flour-milling at Winnipeg, in the centre of the wheat-growing area, and at numerous towns in Ontario; the butter and cheese making which has become so important in the eastern provinces, are all typical examples of manufactures resulting from Canada's wealth of raw materials suitable for food. The abundance of timber has given rise to the industry of saw-milling at numerous waterfalls. With the development of popu-

lation a further stage has been reached, and timber is not merely roughly sawn, but manufactured into implements, furniture, and paper. In other cases the abundance of available water-power has given an impetus to manufactures, for which the raw material, chiefly cotton or wool, has to be imported. A large number of towns in eastern Canada, more particularly in the Lake Peninsula and in southern Quebec, are prosperous manufacturing centres. This most southern, most fertile, and longest-settled part of Canada is naturally the most populous. Without a certain density of population and access to a regular and cheap food-supply, manufactures cannot profitably be undertaken, and this explains the concentration of the manufactures in southern Ontario and Quebec. Nova Scotia and New Brunswick have even better water-power and easier access to coal, but neither, except in the recently started ironworks of Nova Scotia, has at present any considerable manufactures, although these are likely to become important in the future.

St John, Moncton, and Marysville, in New Brunswick, have cotton and woollen mills. In the days of wooden ships, Yarmouth, Nova Scotia, and St John, New Brunswick, were famous for their shipbuilding. Fishing-boats are still built, but the substitution of iron for wood in large vessels has seriously affected their prosperity. The abundance of coal and iron in Nova Scotia may some day lead to a revival of shipbuilding.

Quebec and Montreal, in Quebec, are the most important industrial centres of Canada. The Montmorenci Falls, near Quebec, supply power to a cotton-factory, and the city is famous for its leather, boots, and shoes. Leather and leather goods are also manufactured at Montreal, but sugar-refining and the making of railway plant are more important; while the manufactures of apparel, of cottons, india-rubber, tobacco, and malt liquors are also among its industries. Montreal obtains its electrical power

from the Shawinigan Falls, on the St Maurice River, where it descends from the Laurentian Mountains. Here an important electro-chemical establishment and extensive pulp and paper mills have been erected. The industrial centres of Grand Mère and La Tuque have taken their rise at falls farther up the same stream. Ottawa and Hull, at the Chaudière Falls of the Ottawa River, are important saw-milling and paper-making centres. South of the St Lawrence, Sherbrook, St Hyacinthe, and Valleyfield have cotton or woollen manufactures, and Sorel is a steamer-repairing town near Lake St Peter. Toronto is the largest city in Ontario, with saw, flour, and paper mills, breweries, distilleries, foundries, and furniture manufactories. Kingston at the east and Hamilton at the west of Lake Ontario, and Peterborough at the Fifty Feet Falls of the Otenabee River, north of the Lake, London on the Thames, Cornwall on the St Lawrence, Guelph, Brentford, and numerous other smaller towns in the Lake peninsula, manufacture textiles, iron, machinery, and railway plant. The petroleum found in the region round Petrolia is refined in London, Ontario. Shipbuilding is carried on at Collingwood, Port Arthur, and other lake ports.

**Means of Communication.**—Canada has the most magnificent inland waterways of any country in the world, though they are unfortunately frozen during the winter months. The St Lawrence system is by far the most important. Since the river was dredged great ocean liners steam past Quebec through Lake St Peter to Montreal, over 1000 miles from the Atlantic. Between Montreal and Lake Ontario a chain of canals, the Cornwall, the St Lawrence, and the Lachine, renders the St Lawrence River navigable for large lake vessels. The alternative route by the Ottawa River and the Rideau Canal to Kingston on Lake Ontario is of little importance either from the commercial or the strategic point of view. The Niagara Falls bar the passage between Lakes Ontario and Erie, but the Welland Canal is cut across the Niagara

peninsula. From here navigation is uninterrupted as far as the St Mary River, which issues from Lake Superior as a great rapid (the Sault Sainte Marie, locally known as the Soo), at the side of which canals have been cut both in Canadian and United States territory. The recent deepening of these canals permits steamers drawing fourteen feet of water to penetrate to the western end of Lake Superior, 2250 miles from the Atlantic.

It has been proposed to shorten the distance between Lake Huron and Montreal by about 300 miles by constructing a ship-canal from Georgian Bay, *vid* the French and Ottawa Rivers, to Montreal. The other rivers of Canada have long been used by the Indian or half-breed boatman, who carries his canoe over the short portages from river to river. The upper Columbia and Kootenay Rivers, joined by canal, and the lower Fraser and Skeena, are navigable.

The advance of Canada in recent years has been the result of a great development of the railways, particularly in the west and north-west, greatly facilitating the transport of produce to the lake ports and the seaboard. Within a short time Canada will possess three great transcontinental lines. Winnipeg is the focus of the railway systems of the Dominion, and since the beginning of the century its population has been trebled, and now numbers 135,000. From Winnipeg the Canadian Pacific Railway from the Atlantic seaboard, through Montreal, Ottawa, Sudbury, Port Arthur and Fort William at the head of Lake Superior, proceeds westwards by Brandon, Moose Jaw, and Medicine Hat; here the line divides, one branch passing Calgary and crossing the Rockies by the

Kicking Horse Pass, at a height of 5300 feet; the other, by the Crow's Nest Pass, traversing a rich mineral district. The Grand Trunk Pacific Railway reaches Winnipeg from its lake terminal at Fort William, and is continued to Edmonton, which is rapidly becoming an important railway centre. From the capital of Alberta the line has already reached the Yellowhead Pass, and is under construction through Fort George and the fertile Bulkley Valley, thence down the valley of the Skeena to Prince Rupert, where a large port has been established on one of the best natural harbours on the Pacific coast. From Winnipeg the Grand Trunk line is being continued eastwards through Cochrane and Quebec to the Atlantic coast. When completed the line will form a transcontinental route from Halifax to Prince Rupert, entirely within Canadian territory, and will command much of the traffic of the Dominion which at present reaches the Atlantic seaboard through the United States. A third trunk line, the Canadian Northern, runs to Winnipeg from Port Arthur, where, in addition to extensive smelting-works and ship-building yards, some of the largest grain-elevators in the world have been erected. From Winnipeg the Canadian Northern reaches Warman by three routes: the first by Brandon, Regina, and Saskatoon; the second by Dauphin and Buchanan; and the third by Dauphin and Prince Albert, one of the chief saw-milling centres in the Dominion. The line next passes through Battleford to Edmonton, and is in the course of construction over the Yellowhead Pass and down the valleys of the Thompson and lower Fraser Rivers to Vancouver, which, with the approaching completion

of the Panamá Canal, promises to become an important outlet for the grain of the western plains.

The innumerable branch lines have played a large part in opening up the agricultural areas of the west. Railways cross the artificial frontier between Canada and the United States, and thus link up the two systems; the steamers on the Great Lakes call at ports in both countries. A tunnel has been cut beneath Lake St Clair at Sarnia, and huge ferries carry the trains from Windsor to Detroit, and from Grand Haven to Milwaukee, at all seasons of the year. The Niagara River is bridged, and also the St Lawrence at Montreal. A canal follows the Richelieu River to Lake Champlain and the Hudson Valley. Part of a line is already under construction from Manitoba to Hudson Bay in order to bring this great region much nearer Europe, but the difficulty of navigating the Bay, except for a month or two in summer, renders the financial success of the scheme somewhat doubtful at the present time. Farther east the Tamiskaming line already extends as far north as Cochrane, within 170 miles of James Bay.

The Canadian transcontinental lines not merely unite the provinces of Canada, but form important links of communication between Britain and other parts of the world. The distance from Montreal to Vancouver is 600 miles shorter than that from New York to San Francisco; it is nearly 1000 miles less from Liverpool to Japan and China by the Canadian Pacific than by the United States route, and this distance will be further reduced by 500 miles when the Grand Trunk line is completed and ships sail to Yokohama from Prince Rupert. At present steamers ply regularly

between Vancouver and Japan and China, and the mails are carried from London to Yokohama by Canada in half the time they took by the Suez Canal. The Canadian route, however, is being superseded as a mail route to the Far East by the Great Siberian Railway, as the latter is the shortest route from Britain to Japan.

In summer Montreal is the terminus of the Atlantic liners which call at Quebec. The mails are taken up and landed at Rimouski, nearer the mouth of the St Lawrence, from and to which they are despatched by rail. From November to May the St Lawrence is blocked by ice, and Halifax or St John becomes the winter port. Some Canadian traffic is also carried on through Portland, Maine, and Boston, Massachusetts, in the United States.

**The Internal Trade.**—The internal trade of Canada is very great, and with the rapid increase in population is steadily expanding. All manufactured articles are made or imported by the eastern centres, and sent to the western plains in exchange for cereals. Coal from the Rocky Mountains is sent eastward as far as Regina, beyond which United States coal, brought across the Great Lakes, is found to be cheaper.

**External Trade.**—The exports of Canada are mainly forest products, wheat and flour, cheese, fish, fruit, gold and other minerals, and cattle. Canada can supply itself with most temperate products, but imports those of subtropical and tropical origin. These are largely food-supplies—more particularly sugar, tea, and coffee—and raw materials, especially cotton and india-rubber. Notwithstanding the abundance of coal, many parts round the Great Lakes find it cheaper to import United States coal, which not only finds a market in Ontario and Quebec, but

reaches as far as western Manitoba, where it competes successfully with local coal. The bulk of the imports, however, are manufactured goods, including textiles of all kinds, and iron goods.

More than half the revenue is obtained from duties levied on imports, which fall most heavily on luxuries, which in some cases pay about two-fifths of their value. The duties on other commodities average a little over a quarter of their value. Most raw materials and a large proportion of partially manufactured articles and foods are admitted duty free. A preferential tariff, reducing the duties by one-third, is applied to goods brought in from the United Kingdom, Bermuda, the British West Indies, India, Ceylon, the Straits Settlements, and New South Wales.

The external trade of Canada for the period 1906-1910 amounted to £131,000,000 per annum, of which nearly three-fifths consisted of imports. The countries with which Canada trades most are the United Kingdom and the United States. During the five years ending 1910 the average annual trade with the home country exceeded £41,000,000, nearly three-fifths being export trade. The trade between Canada and the United States is rapidly increasing, partly owing to the large number of American immigrants. In 1906-1910 it had an annual value of £52,000,000, of which seven-tenths consisted of imports. In 1911 the total trade with the States reached £75,000,000. To the United Kingdom Canada sends 48 per cent. of its products; to the United States, 38 per cent.

**Newfoundland.**—The whole island of Newfoundland is rich in minerals. Important iron ore deposits occur on the west coast and on Bell Island, in Conception

Bay. Coal is found in the neighbourhood of St George's Bay and in the Grand Lake district. The output of copper is becoming more valuable. Gold, silver, and lead are found. The fine pine forests supply timber in increasing quantities. The island is threaded by rivers, widening here and there to great lakes, and rich in fish. At Grand Falls and Bishop's Falls extensive pulp and paper mills have been erected, which supply the paper for some of our British newspapers. The climate is cold and moist. Hay, oats, barley, and root-crops are the chief agricultural products.

Fishing is the most important industry, not, however, in the inland waters, but on the Great Bank which lies to the south. Over £1,000,000 worth of fish are exported annually to the United Kingdom, Portugal, Brazil, United States, and Canada.

The railway runs from St John's across the island to Port aux Basques, which is within a six hours' passage of Sydney, in Cape Breton Island, and the Canadian railway system. Branch lines are being constructed to Bonavista, Trepassey, Fortune Bay, and Bonne Bay.

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## CHAPTER IX.

### AUSTRALASIA.

THE economic conditions of British Australasia resemble those of southern Canada in many respects. Australia lies nearer the equator than Canada. The extreme south of the North and all the Middle Island of New Zealand and Tasmania extend south of 40° S.—that is, into latitudes corresponding with those of the Lake peninsula of southern Canada. The North

Island of New Zealand and southern Australia form a transition from these cool temperate to the intertropical conditions which characterise northern Australia.

### NEW ZEALAND.

The Dominion of New Zealand consists of two large islands, the North and Middle (popularly called the South) Islands; the smaller Stewart Island, to the south of the latter; and a number of distant and smaller groups.

**The Middle Island.**—The Middle Island, popularly described as the antipodes of England, lies in the latitude of Italy north of the Gulf of Taranto, but owing to its insular position in the water hemisphere (see page 16), it enjoys a cooler and more equable climate, resembling that of southern England in the extreme south, and that of the west coast of France in the north.

The most important physical feature is the western mountain-range—the Southern Alps—which traverses the island from north to south. This range, which rises to the height of 12,000 feet, is of economic importance not merely as a barrier to communication, but because of its influence on the rainfall of the island. The west winds striking against this lofty barrier are deflected upwards, causing heavy rains on the western or windward slopes. On the eastern or lee side they descend as warm, dry winds, resembling the chinooks of Canada (see page 60), and shake the ears from the too rapidly ripened corn. The rainfall of the Middle Island, therefore, presents a general resemblance to that of Great Britain.\*

\* See *Commercial Geography of the British Isles*, p. 18.

The western slopes of the Southern Alps are covered with dense forests. Pines, cedars, and zimus are the principal timber-trees cut for sawing. Cattle are fed on the forest undergrowth in the lower regions, but the upper mountain pastures are scarcely used. The eastern portion of the island is pasture-land, on which sheep, cattle, horses, and other stock are grazed. The value of the plains is being greatly increased by irrigation, and wheat, oats, barley, grass, clover, and root-crops are cultivated, wheat and oats being the most important. Sheep-rearing, however, is the chief occupation, especially on the Canterbury plains, which produce the famous Canterbury mutton and lamb, in which a large export trade is done.

The Middle Island, therefore, somewhat resembles British Columbia in its economic condition. It is essentially a pastoral country, with a little coal and gold mining. Agriculture will probably develop in the clearings of the eastern mountains, and fruit-growing may be extended in the east.

The North Island lies in latitudes corresponding to those of southern Portugal and northern Marocco. The mountains are lower and less continuous than those of the Middle Island, and are volcanic. The surface is irregular, and the quality of the soil varies greatly from district to district, fertile volcanic and alluvial soils alternating with barren clays.

The northern part lies in the summer track of the trade-winds, but elsewhere the climate resembles that of the southern island except that it is warmer.

The south and south-west, with good soil and heavy rainfall, are forested. Where the forests have been

cleared excellent grass-lands are formed on the hill-sides, and agricultural lands in the valleys.

In the south-west cattle and cows are kept, and butter and cheese are made. The south consists mainly of forests or grass-land. The east, with a low rainfall, has rich grass-lands on which millions of sheep are fed. In the north the rain falls in winter and spring. Mediterranean fruits of all kinds flourish, such as the vine, olive, orange, lime, and lemon, as well as fruits of more temperate lands. Great forests of kauri exist, and yield valuable timber. Kauri-gum, an ingredient of most varnishes, is as important as the timber. It is obtained after burning the forest, a practice greatly to be deprecated, or dug in a fossil condition. The broad leaves of New Zealand flax, or phormium, supply strong fibres, which are made into rope, mats, and other articles.

**Minerals.**—In the Middle Island gold and coal are the chief minerals. Both alluvial gold and reef gold are mined, about 65 per cent. of the total output of New Zealand being derived from quartz-mines. The main sources of supply are at Reefton, near Westport; near Hokitika and in most of the Westland rivers; and in the valley of the Clutha River, Otago. The chief coal-field of New Zealand is at Westport; valuable deposits occur at Greymouth, and at Brunner and Blackball, in Westland. Lignite is found at Green Island and Milton, in Otago. Some silver is also mined.

In the North Island gold, coal, and petroleum are obtained. Auckland has the richest goldfields in the Dominion; gold-yielding quartz is found in the peninsula east of Hauraki Gulf, especially at the famous Waihi Mine, and is crushed chiefly in the Thames

county. Some coal is found at Kawakawa, to the north of Auckland, at Huntly on the Waikato River, and in the Mokau valley, in Taranaki. Deposits of petroleum are being developed near New Plymouth.

**Routes and Trading Centres.**—The chief towns of New Zealand are ports. Invercargill and Dunedin in the south, Lyttelton and Timaru (the outlets of the Canterbury plains), Hokitika, Westport, and Nelson are in the Middle Island; and Wellington, Napier, and Auckland in the North Island.

The railways in the Middle Island run from Invercargill through Dunedin, Oamaru, Timaru, Christchurch, and Lyttelton, its port, to Mackenzie, with numerous branches to the north and west. There are short lines from Hokitika, Westport, Nelson, Blenheim, and Picton.

Two roads cross the Southern Alps, one from Hokitika to Christchurch, the other from Westport to Nelson and Blenheim.

In the North Island a railway runs from Wellington to Napier, on the east coast, and through the western half of the island to Hotso, near Kapara Harbour, in Auckland. Branches run to the Thames valley, the picturesque volcanic lake districts in Rotorua, and along the south-west coast to New Plymouth. There are short lines from Dargaville, Kawakawa, and Whangarei, in Auckland, and from Gisborne, on Poverty Bay.

The coasting traffic is important, and counteracts to a great extent the disadvantages of the disconnected railway system.

**Trade.**—The number of factories in New Zealand is steadily increasing, chiefly in connection with the pastoral industries of the country. Meat-freezing and butter and cheese factories are widely distributed. Saw-milling is an important industry, and woollen and flax mills are extending. Fruit-canning is growing in importance. Wool, frozen meat, butter and cheese, sheepskins and tallow, gold, grain, kauri-gum,

and sawn timber are the chief exports. The imports consist largely of textiles and wearing apparel of all kinds, iron goods, sugar and tea, alcoholic drinks, books and stationery. Four-fifths of the trade is with the United Kingdom and Australia. The rest is mainly with the United States, Fiji, India, and Ceylon.

### TASMANIA.

**Physical Conditions.**—Tasmania lies in the same latitude as the northern half of the Middle Island of New Zealand, which it resembles in its climate and products. It is a mountainous island, the chief plains being in the basins of the Macquarie and Derwent. The climate somewhat resembles that of south-western England. The rainfall is very heavy in the west, where the land is forested, and occupied only by a few miners and prospectors. In the north and east the rainfall is less.

**Economic Productions.**—The area of grass-lands is restricted by the extent of the forests, where eucalyptus and pine abound. Cultivation is confined to the valleys. Most cereals are grown south of the Tamar estuary. Potatoes and other root-crops are widely cultivated, especially in the north-west. Temperate fruits of all kinds do well, and apple-orchards are numerous in the south. Grapes are cultivated for wine in Maria Island, in the east. Sheep are the most important stock, the mild winters allowing them to remain in the open all the year round. Dairy produce is now exported.

The mineral wealth is considerable, but not yet fully exploited. Tin is found in Mount Bischoff, in the west, and smelted at Launceston, on the Tamar. Gold

is widely distributed, and is mined at Beaconsfield, on the Tamar; at Mount Lyell, near the west coast; and at other centres. Silver is mined on the west side of the island, between the Picman River and Macquarie Harbour. Copper is found in the same area, especially at Mount Lyell, and is smelted at Queenstown. Iron deposits occur near Burnie and Penguin, on the north coast. Coal for local use is mined at Fingal in the east, and in the Mersey basin.

Manufactures are in a rudimentary state, and entirely devoted to utilising local raw material. Saw-mills, jam-factories, and other workshops have been started.

**Means of Communication.**—A considerable coasting trade is carried on, and regular lines of steamers run from Hobart, in the south, and Launceston, in the north, to Victoria and New South Wales, New Zealand, and the United Kingdom. A railway runs northwards from Hobart, through Launceston, to Hazlewood. There are branch lines down the South Esk valley, past the Fingal coalfield, to St Mary, and to Glenora and Apsley. From the main line near Perth a branch crosses the agricultural regions of Westbury and Hamilton, follows the Mersey valley to the north coast, and at Burnie turns south-west through a rich mineral district to Pillinger, at the head of Macquarie Harbour.

**Trade.**—The exports are minerals—copper, gold, silver, and tin—wool, fruit, and potatoes.

The imports are clothing, machinery and hardware, tea and sugar. The trade is mainly with Victoria, from which Tasmania is distant only 120 miles, New South Wales, and the United Kingdom.

## THE ISLAND OF AUSTRALIA.

**Position and Configuration.**—The continent-island of Australia lies between 40° and 10° S. (cf. Lisbon to Sierra Leone, Baltimore to Trinidad). It is a compact island, broken by few bays. The west is a plateau, above which rise numerous low ranges. The east consists of mountains, with steep slopes to the coast and gradual slopes to the interior. These mountains are lower, wider, and more irregular in Queensland than in New South Wales and Victoria, where they act as important barriers. A band of low ground, scarcely reaching above 1000 feet in the highest part, stretches across the island south of the Gulf of Carpentaria, which may be regarded as a submerged northern continuation of this lowland. In the south, the Gawler, Flinders, and Stanley Ranges rise above the plain.

The eastern coast north of the tropic is fringed by a great coral barrier reef, which forms a huge natural breakwater, 1200 miles long. The entrances across it are usually opposite the river-mouths, but navigation inside it, while smooth, is somewhat dangerous, owing to the existence of innumerable islets.

**Climate.**—Australia stretches almost as far north as south of the tropic. Most of it, therefore, lies in the trade-wind region. In the centre of the continent considerable extremes of temperature are felt, both the daily and the annual range being great. In the south it is cool in winter, especially on the higher lands, where snow sometimes falls; but in the north it is hot throughout the year. The trade-winds are laden with rain, which falls abundantly on the east coast, espe-

cially during the summer months, but they precipitate most of it on the eastern mountains, and the centre and west of Australia are often rainless for long periods. When rain does fall, it is in heavy torrential thunder-showers, which do as much harm as good. The south lies in the winter track of the stormy west winds, and receives most of its rain at that season. The north has the sun overhead at noon in the summer months, during which it is in the equatorial rain-belt.

The rainfall of Australia, therefore, is confined to the north, east, and south coasts; the west coast is comparatively dry, and the centre is almost rainless. The rainfall varies greatly from year to year. In some years damage is done by floods, while in others millions of animals perish through drought. The rivers vary greatly in size at different seasons, some drying up altogether except during and after the rains.

The following table shows the number of sheep that can feed on a square mile of land in regions with different rainfalls:

Inches of rain	...	...	...	...	8-10	13	20
Sheep per square mile...	...	...	...	...	8-9	96	640

It is easy to see how great a loss may have to be borne by a stock-raiser in a district where the average rainfall is fifteen inches, if during one or more years the precipitation falls to twelve inches or under.

From official figures for South Australia, it is calculated that the yield of wheat per acre is about six bushels less than the number of inches of rainfall in the winter six months, so that if this rainfall

is eighteen inches the yield will probably be twelve bushels per acre. With the extension of cultivation into the drier parts of the colony, the average yield has diminished.

**Economic Divisions.**—The economic divisions are dependent on the rainfall. It is necessary to distinguish (1) the practically unproductive desert; (2) the southern strip moistened by winter rains; (3) the regions of summer rains in the east; (4) the hot, wet, tropical regions of the north.

**The Desert.**—Much of the desert is covered with prickly scrub. Towards its edges is the salt bush, on which a few sheep can be fed. Most of its vast area is, however, wholly unproductive, except where irrigation is possible, when almost anything can be grown. The centre of South Australia and a very large portion of Western Australia are desert. The only inhabited parts are the goldfields (see pages 90, 91).

**The Southern Region of Winter Rains.**—The extreme south-west of Western Australia between Perth and Albany, the extreme south of southern Australia east of Spencer Gulf, Victoria, and the extreme south of New South Wales all lie within this region, which is the most temperate part of the continent, and best suited to settlers from the United Kingdom.

The colony of Victoria, the smallest and most southern of the Australian states, lies entirely within this region, and is typical of a country with a Mediterranean climate and productions in an early stage of economic development.

**Victoria** has approximately the area of Great Britain, and lies south of 34° S. It is traversed by a range of mountains running from east to west parallel to the

south coast, which is indented by the great bay of Port Phillip, dividing the southern coastal region into two parts, of which the eastern is called Gippsland.

The north-western flat land between the Murray River and the mountains receives little rain, and is covered with mallee scrub. This is now cleared and broken by a plough which rises over stumps in the ground. Some wheat is grown. The most valuable parts, however, are irrigated by the waters of the Murray River.

The rainfall is greatest on the southern slopes of the mountains, which are covered with forests, but are less fertile than the northern slopes, which face the sun. Gippsland receives both winter and summer rains, and the whole region is well wooded.

The characteristic products of warm temperate lands with winter rains do best on the northern slopes of the mountains. Wheat and oats are grown in the upper valleys and slopes, while on the northern plains maize can be cultivated. Fruit of all kinds, including the apricot, peach, fig, olive, orange, and especially the grape, is grown in the Murray and Goulburn valleys, especially where irrigation is possible.

The yield both of cereals and fruits varies from year to year with the rainfall.

The principal occupations are the raising and fattening of cattle and sheep for the market, dairy-farming in the west, horse-breeding, and hop-growing.

In the irrigated region of Mildura, along the banks of the lower Murray, much fruit (akin to that of southern Europe) is grown and dried.

The southern part of **South Australia** resembles Victoria in its winter rains. The crops are sown when

the autumn rains begin, and are harvested in the spring. Some excellent white and hard-grained wheat is raised, but the yield varies with the rainfall; extensive irrigation schemes are in project, especially in the valley of the Murray River, where already much of the cultivated area in the Renmark district is irrigated land. Mediterranean fruits are grown. Towards the north and west the country becomes too dry for agriculture, which is replaced by sheep-rearing. Frozen rabbits are exported in considerable quantities.

The south-west of **Western Australia** resembles South Australia and Victoria. Considerable forests exist, which produce sandalwood and the hard jarrah and karri timbers, suitable for all kinds of paving and engineering work. Sheep, cattle, horses, and pigs are reared, the main drawback being the frequent droughts and the presence of poisonous plants. Within recent years the State encouragement of immigration and the promotion of railway and irrigation schemes have done much to develop the resources of the country. The area under wheat cultivation is steadily extending, and the yield has increased from less than a million bushels in 1902 to over nine millions in 1912. Hay is also an important crop, and oats and barley are raised. The number of orchards is increasing in the south-west, and considerable quantities of fruit, mainly apples and grapes, are annually exported.

The **Eastern Region of Summer Rains** includes the eastern parts of **New South Wales** and **Southern Queensland**. Above a narrow eastern coastal plain the mountains rise in steep escarpments, sloping more gently on the west towards the interior. Heavy rain falls on their eastern slopes in summer, but the precipitation

gradually diminishes towards the west. Maize and sugar are the most important crops, but many sub-tropical fruits are grown. Between Sydney and Newcastle grapes and oranges flourish, but farther north the winter is too short for the vine to have a sufficiently long resting period, and the rains usually begin before the vintage is complete, even in the less rainy region west of the eastern mountains. Tobacco, cotton, arrowroot, pine-apples, and other fruits are also grown, especially towards the northern limit. At the eastern rim of the plateau, where the rainfall is more copious, a considerable amount of wheat is grown, especially in the south; and oats, barley, rye, millet, and other cereals are produced both for their grain and for their straw. Farther west the grassy downs feed millions of sheep, reared chiefly for their wool; New South Wales possesses about 50 per cent. of the total number of sheep in the Commonwealth, the famous merino sheep supplying the best wool in the world. Horses and cattle are reared in smaller numbers, but the chief cattle-rearing region is found along the moister coastal plain of Queensland, as far north as the Fitzroy River. In New South Wales wheat-growing is increasing in importance in the southern part of the western slopes and in the Riverina district, although the yield per acre is low. Where irrigation is possible, agriculture is developing. Numerous artesian wells have been sunk, especially in Queensland.

Dairy-farming has developed considerably in New South Wales in recent years. It was formerly confined to the southern coastal region, but the milder climatic conditions of the north, allowing the cattle to remain

in the open throughout the winter, the generally greater rainfall, and the lower cost of land have encouraged the rapid expansion of the dairying industry in the coast district north of the Hunter River. Large quantities of Australian butter are annually exported, mainly to London, where it enters into competition with the dairy produce of Sweden and Denmark.

**The Northern Hot, Moist Tropical Regions.**—**Northern Queensland** is typical of the hot, moist, densely wooded part of Australia. Rice, sugar, bananas, coco-nuts, mangoes, coffee, cotton, and other tropical products are raised. Sugar can be grown in the rich soil of the hot and moist coastal plain, the principal areas of cultivation lying round Mackay and Cairns, north of the tropic, and round Bundaberg and Grafton, south of it. The industry was formerly carried on with Kanaka labour, obtained from the adjacent Pacific islands; but since 1901 the importation of coloured labour has been prohibited, and a bounty has been paid upon every ton of sugar grown by white labour. As a result the production of Australian sugar has been more than doubled, while imported sugar has fallen to less than one-twentieth its former quantity, and is now exceeded by the amount of Australian sugar which is exported.

Sheep and cattle are reared along the Flinders and Cloncurry rivers. Queensland contains the largest number of cattle in the Commonwealth.

The northern portions of **Northern Territory** and of the **Kimberley Division of Western Australia** are similar\* in climate and products to northern Queensland, except that the rainfall is hardly so

great and decreases towards the west and south, and that the forest-land does not stretch so far inland.

Northern Territory has an area of over half a million square miles, but its population, excluding aborigines, just exceeds 3000, of whom a third are Europeans.

Agriculture, which is done by Chinese labour, is possible only under irrigation, and is so far unimportant. Tropical fruits, cereals, such as maize and rice, as well as tapioca and tobacco, can be grown along the coastal region. Wherever a sufficient supply of water is available, the tableland, that rises from the coast, is suited for stock-raising.

**Australian Minerals.**—The discovery of rich placer gold mines in the fifties led to a great influx of gold-seekers to Victoria and New South Wales. Later, gold attracted immigrants to Queensland, and in recent years to Western Australia. In Victoria the chief gold-centres are round Bendigo, Beechworth, and Ballarat. The gold is now mainly obtained from quartz. Gold is less important in New South Wales, where it is mined chiefly at Bathurst and Wyalong, the latter in the Lachlan district. The Queensland gold-mines are very important in the south, round the Gympie; in the centre where the famous Mount Morgan mines exist near Rockhampton; and in the north round Charters Towers, Ravenswood, Croydon, Etheridge, and Woolgar. Gold is widely distributed in Western Australia, in the Kimberley district in the north, and in the Murchison and other goldfields in the west. The greatest development, however, has taken place in the south, round the Coolgardie gold-

fields and the Mount Margaret district to the north-east of Coolgardie; the chief centres are Kalgoorlie, Menzies and Coolgardie, Malcolm and Laverton. Food and water are scarce in these desert regions, the rainfall being usually less than ten inches, and the gold is expensive to extract; but the opening of railways and the bringing of water from the Helena River, twenty-three miles from Perth, have improved the economic conditions.

**Silver** is found in many parts of the continent. The most important mines are in the Stanley Range, in the west of New South Wales, where the town of Willyama has grown up round the Broken Hill. Considerable quantities are also found near Cairns, in northern Queensland. In both these regions a little tin is mined.

The most important copper-mines are found in northern Queensland, the chief centres being Cloncurry, Mount Morgan, and Chillagoe. The production of copper is the leading mineral industry of South Australia, the most valuable mines being at Moonta and Wallaroo; the ore is smelted at Port Pirie and Wallaroo. In New South Wales copper is mined round Cobar.

The most important coalfields in Australia are those of New South Wales, extending in a semicircle from Newcastle, westward to Lithgow, to the neighbourhood of Bulli in the south. This area furnishes about 70 per cent. of the total output from the Commonwealth. From Sydney and Newcastle large quantities of coal are exported to other states in the Commonwealth and also to foreign countries, especially to the Pacific states of South America. In Queensland con-

siderable quantities of coal are obtained near Ipswich, which has become a manufacturing centre of some importance. Small coal-basins occur near Cooktown, Townsville, and Clermont. Extensive deposits are known to exist in the valley of the Dawson River. In Western Australia coal is mined near Bunbury, on the river Collicie. In Gippsland there are great deposits of brown coal, in some places over 200 feet thick; a State mine has been opened up at Wonthaggi. Small deposits of rather poor coal are also found at Leigh Creek, in South Australia.

**Ironstone** occurs at Chillagoe and Rockhampton in Queensland, and at Iron Knob in South Australia. Hitherto the ore from the South Australian mines has been smelted at Port Pirie with coal imported from New South Wales; but iron and steel works are being established near Newcastle for the purpose of utilising the ores from Iron Knob.

**Opals** are found at White Cliffs, north of Wilcannia on the Darling, in New South Wales, and in western Queensland. **Sapphires** are obtained in central Queensland. **Diamonds** exist in Western Australia, and **pearls** are obtained by divers off the northern coasts.

**Australian Manufactures.**—The population is still too small and widely scattered to permit of a great development of manufactures. In Victoria and New South Wales, where population is densest, manufactures are most developed. The number of hands employed is about the same in each state, and in both the making of textiles and clothing, of metal and machinery, and the preparation of foods and drinks, rank first, followed by the manufacture of transport materials, paper, leather and leather goods.

The preservation of food for export is everywhere an important industry. The elaboration of dairy produce is important in the south and east, and sugar-refining in the north. Saw-mills are numerous both in the east and in the south-west. The other manufactures are concentrated in the larger towns, more particularly in Melbourne and Sydney and the other capitals; Geelong (woollen manufactures), Ballarat, and Bendigo (transport materials) in Victoria; Newcastle and Lithgow (iron and steel works), and Maitland in New South Wales; Ipswich (railway stock), Maryborough, and the sugar-producing towns of Queensland; Gawler (flour-mills and engineering works) in South Australia. Shipbuilding is carried on at Sydney, Williamstown (Victoria), and Adelaide.

**Means of Communication.**—Australia, unlike Canada, is deficient in waterways, and the coasting traffic is much more important than that by river. Several of the eastern rivers are navigable for short distances. The Murray and the Darling are both navigable by light-draught steamers in the rainy season, the former to Albury, the latter to Bourke, but communication with the sea is prevented by the sand-bar at the mouth.

The railway system of Australia is gradually being extended, but unfortunately different gauges have been adopted for the lines in different states, involving break of bulk at the frontier. Adelaide, Melbourne, Sydney, and Brisbane are all connected by rail. From Adelaide the railway runs to the Broken Hill mines in the Stanley Range, and northward by the Flinders Range to Oodnadatta, north-west of Lake Eyre. In New South Wales branches run to Murrumbidgee and

Bourke on the Darling. From Brisbane the line passes northward through Gympie and Maryborough to Rockhampton. A branch runs westward from Brisbane through agricultural centres as far as Charleville and Cunnamulla on the Warrego River. Two other lines run due westward to the centre of Queensland, the one from Rockhampton through Emerald to the valley of the Thomson River, the other from Townsville through Charters Towers to Cloncurry. Numerous smaller railways have been built from several ports, such as Mackay, Bowen, Cairns, Cooktown, and Normantown, through sugar-growing regions to the mines. The railway network is densest in Victoria, especially north of the mountains. In Western Australia the lines radiate from Perth northward to Geraldton, and thence to Nannine, on the Murchison goldfields; eastward through Yilgarn to Kalgoorlie, Coolgardie, Menzies, Laverton, and other mining centres; and southward to Albany on King George Sound, and to Busselton on Geographe Bay. From Kalgoorlie the railway is now being extended eastward to join the South Australian system at Port Augusta, thus providing a continuous line from Perth to Queensland, with a total length of over 4000 miles. A short line runs inland from Darwin (formerly Palmerston), in Northern Territory; it is proposed to continue this line southward to join the line from Adelaide, and thus provide a second transcontinental line.

The Australian Commonwealth is composed of the six states, New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania and the Northern Territory. Throughout the Commonwealth uniform customs duties are imposed, and all

interstate trade is free. A certain amount of protection is afforded to Australian industries, but a preferential tariff applies to goods produced in and shipped from the United Kingdom. The seat of the Federal government is being established at Canberra, in New South Wales, situated on the main railway line between Sydney and Melbourne, and about 900 miles distant by rail from the capitals of Queensland and South Australia.

**Trade.**—Wool, gold, and wheat are the most important exports from Australia, followed by animals and animal produce (including hides, skins, meat, and tallow), dairy produce, copper, lead, and coal. The leading imports are metals and metal goods (including machinery, railway stock, and agricultural implements), textile fabrics and apparel, foods and drinks, drugs and chemicals, paper and books. The bulk of the trade is carried on with the United Kingdom, which supplies over 60 per cent. of the imports to Australia, and takes nearly 50 per cent. of the exports. Among foreign countries the chief customers are Germany (taking 6 per cent. of the exports from Australia, and sending 7 per cent. of the imports), the United States, France, and Belgium; except in the case of the United States, the exports to these countries considerably exceed the imports.

In 1910 New South Wales had 41 per cent. of the international trade of the Commonwealth, Victoria 28 per cent., South Australia 12 per cent., Queensland 10 per cent., and West Australia 7 per cent. British weights, measures, and coinage are used. The statistical tables at the end give further details, and should be consulted.

## CHAPTER X.

## SOUTH AFRICA.

AFRICA south of the Congo-Zambezi divide lies between the same latitudes as Australia north of the Murray and Murrumbidgee. It is much narrower and much higher. Except north of Delagoa Bay, the coastal plain is very narrow, and most of the land lies above 3000 feet. It is a plateau land, bordered by lofty mountains only in the south-east.

The climatic conditions are similar to those of Australia south of the tropic. A small region of winter rains exists in the south-west, which may be compared with the south-west of Western Australia. In the east there is a narrow strip of land receiving a considerable rainfall in summer. The rainfall gradually diminishes from the top of the eastern escarpments towards the west. The climatic differences are that, owing to its greater elevation, South Africa has a lower mean temperature and colder nights and winters than Australia, and that, owing to its smaller breadth from east to west, the desert area is much less extensive. North of the tropic the temperature conditions resemble those of northern Australia; but the rainfall is lower, owing to the presence of Madagascar on the east, and the absence of sea to the north.

South Africa is therefore not so favoured as Australia. It has no equivalent for Victoria and the southern part of the east of New South Wales. The region with more than forty inches of rain, suitable for subtropical and tropical cultivation, is smaller; but

the area with over ten inches, where stock can be kept, is proportionately as great as in Australia. The variations of rainfall and the frequency of droughts are as great as in Australia.

**Economic Divisions.**—The natural economic conditions also resemble those of Australia. The west of the Cape of Good Hope Province, Bechuanaland, and German South-west Africa are practically semi-desert regions, though in parts the land can be stocked with about one sheep to ten or twelve acres. Underground water exists, and the land may be rendered productive by irrigation, which, however, has seldom been found profitable up to the present.

The **South-western Region of Winter Rains** is more limited than in south-western Australia, extending, roughly speaking, from the Orange River to Mossel Bay. This is the wine-producing part of the Cape Province, in which all Mediterranean fruits except the olive can be cultivated. Vines flourish best on the slopes of the Table and Drakenstein Mountains. Wine and brandy are both manufactured, especially at Paarl. The flat lands produce cereals, Malmesbury being the centre of the wheat-farming region. Oats and barley are cultivated in the same district, and in the valley of the Breede and its tributaries. Fruit and vegetables also do well, but the supply of agricultural and farm produce is not sufficient to meet local demands.

The coastal region, the Lange and Outeniquas Mountains, and the Little Karroo behind receive about as much rain in summer as in winter. The rainfall is greatest on the southern slopes of the mountains, where half of the few forests of the Cape Province are found in the Knysna region. Yellow

and stink woods, the chief timber-trees, are felled in autumn, the former for railway sleepers, the latter for carpentry, furniture, and wagon-building. The eastern half of the Little Karroo has a limestone soil, which favours the growth of tobacco round Oudtshoorn. Irrigation works are being undertaken in the Breede and Fish River districts.

At East London the **Region of Summer Rains** begins. Some forests exist in the south-east of the Cape Province, but they are less important than those in Natal, where, however, they have been too indiscriminately cleared. Yellow-wood, stink-wood, sneeze-wood, and iron-wood are the most important trees. The coastal region of Natal resembles that of northern New South Wales. Sugar, tea, and maize are the chief crops on the coastal plains. The output of sugar was more than doubled from 1906 to 1911. In the higher 'midland districts,' corresponding to the edge of the plateau in New South Wales, wheat, barley, oats, and rye are cultivated. This region favours the growth of the black wattle, a native tree of south-east Australia, which yields a valuable bark for tanning, the export of which has increased in value from £5000 in 1891, and £70,000 in 1901, to £193,000 in 1909. Much land in this region is devoted to stock-raising; this becomes the chief occupation in the treeless 'upper districts,' where the winters are cold and the country is covered with thick grass.

In the **Bush Veld** of the Transvaal, and over the greater part of the Orange Free State Province, especially in the neighbourhood of Vereeniging, the climate is well adapted for the cultivation of maize, which is the principal crop. The cold, bright weather

during the long harvest season prepares the grain for export without artificial treatment.

The **High Veld** of South Africa, a vast undulating plateau 5000 feet above sea-level, is at present almost entirely pastoral, except in the extreme south-west of the Transvaal, where maize is the dominant crop, and round the Caledon River and the east of the Transvaal, where wheat is cultivated under conditions similar to those of the eastern Downs of Australia. Sheep, the most important live-stock, are reared chiefly for their wool, while cattle are bred mainly for draught purposes. In the higher western regions the native sheep are kept, but in the more favoured parts the merino sheep is bred for its wool. The hardy goat, which can live in much less favourable regions than the sheep, is widely distributed; the Angora goat from Asia Minor is reared, especially on the Great and Upper Karroos of the Cape Province, for its hair (mohair), of which the export in 1909 amounted to 18,000,000 lb. (£800,000), the principal market being at Port Elizabeth.

Horses cannot be used unless 'salted'—that is, protected from the fatal horse-sickness, to which they are very liable. Ponies, however, are reared in the Basuto highlands and in some parts of Natal and the Cape Province, in the extreme south-east of which horse-sickness is fortunately unknown.

The conditions on the **Rhodesian plateau**, between the Limpopo and the Zambezi (Southern Rhodesia), resemble those of Queensland immediately north of the tropic. The altitude of the plateau, ranging from 3500 to 5000 feet, counteracts most of the disadvantages associated with a tropical country. With the

northward extension of the railway from Bulawayo through Livingstone and north-west Rhodesia to the Star of the Congo, in the south of the Katanga province of the Belgian Congo, and the extension through Southern Rhodesia to Salisbury, which is connected by a line through Umtali with the port of Beira, important developments are taking place throughout the country. It is rich in minerals; the annual output during the last few years has exceeded £2,500,000, consisting mainly of gold, but also including considerable quantities of silver, copper, lead, coal, and chrome ore. The country is well suited for the cultivation of tobacco, which has now found a place in the British market; of maize, which is the staple crop; of oats, wheat, and barley, chiefly grown as winter crops under irrigation; and of the principal European and subtropical fruits and vegetables. Cotton-growing has been attempted on a small scale.

The conditions in the Nyasaland Protectorate, with its average elevation of 3000 feet, are those of a purely tropical country, where Europeans cannot settle permanently except in a few favoured spots; the white population numbers less than 700, while the native inhabitants exceed a million. Cotton has been planted with marked success, and in 1910 formed 20 per cent. of the total exports. Tobacco has also proved a successful crop, and the export is increasing annually. The acreage under coffee has shown a decline in recent years, but the value of the export in 1909 exceeded £19,000. The climate favours the cultivation of maize, tea, rubber, fibres, and chillies. Labour is abundant and cheap, but the present cost of transport is a serious hindrance to the development of the

country. A railway, 113 miles in length, connects Blantyre with Port Herald on the Shiré River, whence a steamer service is maintained to Chinde at the mouth of the Zambezi. It is vitally important to the commercial expansion of Nyasaland that this line should be continued southwards to Beira and northwards to Lake Nyasa, which affords water transport for 360 miles.

**Minerals.**—Gold and diamonds are the all-important minerals in South Africa. **Diamonds** are found in the filled pipes of old volcanoes, which are scattered about the region near the confluence of the Vaal and the Orange, where Kimberley, the chief diamond centre, is situated. The 'stones of fire' are also found in the Orange Free State Province, at Jagersfontein, where some of the finest diamonds have been discovered, in the Boshof district, and in the neighbourhood of Kroonstadt. The largest of all the diamond-mines in South Africa was discovered a few years ago near Pretoria, and here the famous Cullinan stone was obtained in 1905. **Gold** is found in many parts of the Transvaal, in the districts of Lydenburg, Barberton, and Zoutspanberg, and on the Rhodesian plateau, chiefly within a radius of a hundred miles of Salisbury. The most important mines are those of the Witwatersrand, or Rand, where the metal occurs in a conglomerate locally known as 'banket.' Johannesburg is the centre of the gold-mining region and the largest town in South Africa, with a population of 240,000 in 1911, of whom half were whites. **Copper** occurs south of the mouth of the Orange River, where it is mined at Ookiep and Concordia, and carried by a railway to Port Nolloth, 60 miles distant. Still

more important are the rich deposits which have been discovered at Messina, near the Limpopo River, about 130 miles to the north of Pietersburg, from which town the railway is being extended to the mines. Tin is found on the northern slopes of the Rooiberg hills, about 70 miles to the north of Pretoria. Seams of poor coal occur in the Stormbergen, in the Cape Province. Coal is the most important mining industry in Natal, and is extensively carried on in the vicinity of the Klip River, between Newcastle and Elandlaagte. Coal is also found in the Vryheid district, and at Somkeli on the Zululand coast. All these mineral fields are connected by rail with the port of Durban, from which large quantities of coal are annually shipped, either for bunker purposes or for export to other parts of South Africa or to Indian Ocean ports. A considerable quantity of Natal coal is consumed by the railways of southern India and Ceylon. The largest output of coal in South Africa is from the Transvaal mines, in the neighbourhood of Middelburg and the Rand, where it is mainly consumed by the gold-mines and on the railways. An important field is being opened up at Wankie, in Southern Rhodesia, and coal also occurs on the shore of Lake Nyasa. Valuable deposits of iron ore are known to exist to the north of Pretoria and in the Vryheid district of Natal, but so far no attempt has been made to develop them. Asbestos is worked in the Victoria district of Rhodesia and the Carolina district of the Transvaal.

**Manufactures.**—The manufactures are still in an early stage of development, and at present the mining and agricultural resources of the country are by far the most important. The chief manufactures are

those of wine and brandy in the south of the Cape Province, of sugar and rum in Natal, and of tobacco at the Cape, in the Transvaal, and Rhodesia. Some tanneries and saw-mills exist; and a few cotton-ginneries have been established in Nyasaland. The Cape ox-wagon is a notable local product.

**Trade.**—Gold and diamonds are by far the most important exports. Next in order of value come wool, ostrich feathers; hides and skins, coal, mohair, copper ore, and bark; the export of South African fruits and tobacco is increasing. Every kind of manufactured article is imported, as well as food, under which head are included not merely luxuries, but the necessaries of life. At present the United Kingdom contributes nearly 60 per cent. of the imports.

**Means of Communication.**—The natural means of communication in South Africa are bad. No good harbour exists except at Delagoa Bay and at Saldanha Bay, the latter of which lacks fresh-water. The harbours of Cape Town, Port Elizabeth, East London, and Durban have been constructed at very great expense, and are not yet entirely satisfactory. Cape Town, on Table Bay, the nearest port to Europe, is the port for much of the passenger traffic, especially since the building of the line across the Karroos and the Veld to the diamond-mines of Kimberley, a line now extended northwards through Bulawayo, across the Zambezi gorge at the Victoria Falls, beyond the frontier of the Belgian Congo. The produce of the mines is sent to Cape Town, Port Elizabeth, and East London. From the two latter ports a great part of the wool is shipped.

The development of the mineral fields has led to

the building of railways from all the South African ports. In addition to the continental line from the Cape, a railway runs from Mossel Bay, Port Elizabeth, and East London through the centre of the Orange Free State Province and the Transvaal, by Bloemfontein, Johannesburg, and the Rand goldfields, Pretoria (the seat of the Union Government) to Pietersburg, from which point it is now being carried to the border of Rhodesia and the copper-mines of Messina. The line from Johannesburg to Durban (Port Natal) traverses the Newcastle coalfield, while that from the Rand and Pretoria to Lourenço Marques passes through the Middelburg district. Branches have been constructed from the main lines to the adjoining mineral fields, and are being steadily extended. The line from the Cape through Bulawayo has been continued past Selukwe to Salisbury, in Southern Rhodesia, which is also joined to the port of Beira by a railway through the Manika goldfields, on which New Umtali is built. Arrangements are now in progress for the building of a line from Beira to the Zambezi and thence to Port Herald, in Nyasaland. Where the railway has not yet penetrated, the ox-wagon is the common mode of transport.

The economic conditions of South Africa are much more complex and much less satisfactory than those of Australia. The plateau configuration of South Africa militates against ready communication with the coast. The rivers flow in deep gorges, so that water cannot be easily reached for irrigation purposes; and not merely does their volume vary, as in Australia, but they are broken by rapids. On the other hand, the supply of underground water, especially in Bechuanaland, re-

sembles that of western Queensland and northern New South Wales. In the territories south of the Limpopo only a quarter of the population is white. In the other parts of South Africa the blacks outnumber the whites by millions to thousands. The presence of this black population has led to their employment for almost all manual labour, even in parts where whites can live and work without injury to health. Since the conclusion of the Anglo-Boer war the white peoples in South Africa have united in an effort to develop the great natural resources of their country, and to find a permanent solution for the many grave and difficult problems with which they are confronted. The financial arrangements of the Union are being reorganised and placed on a stable basis, land settlement is being encouraged, the railway system has been consolidated and much wasteful competition for traffic between the railways of the different provinces has been eliminated, the conquest of stock diseases is being undertaken, and the need for extending educational facilities and for encouraging the growth of industries is clearly realised. When these questions have been dealt with, the most difficult of all the South African problems will still await a solution—namely, the colour problem.

## CHAPTER XI.

### SOUTHERN SOUTH AMERICA.

SOUTH AMERICA tapers acutely south of the tropic of Capricorn. In latitudes corresponding to those of South Africa it has almost the same breadth, but its

configuration is very different. The central band is a vast plain, penetrated by the shallow La Plata estuary, and bordered on the east by the southern highlands of Brazil, which are not so high as the tableland of eastern South Africa, and on the west by the chains of the Andes, which, north of the Uspallata Pass, do not descend below 10,000 feet, and form a practically insuperable barrier. South of this pass and the Plate estuary the eastern highlands practically disappear, the plain rises to the Patagonian plateau, the western heights become lower, and rivers flow from their eastern slopes across them in deep gorges to the Pacific.

The climate presents great contrasts in east and west and in north and south. The eastern region round and north of the Plate receives wet summer winds; the western region here, as in Africa, is dry and semi-desert. To the south the southern New Zealand conditions are found in a more intense phase; the west is very wet with rain brought by western storm winds; but east of the mountains the climate is very dry, except close to the coast, where the winter storm winds bring a little rain. The chinook or fœhn winds are common at the eastern base of the Andes, as of the Rockies or the Southern Alps of New Zealand.

**Economic Divisions.**—The North-east Region of Summer Rains resembles south-east Australia, with this exception, that the plains to the east of the Highlands are much better watered and more fertile than the corresponding lowlands of Australia south of the tropic. It is of interest to note that in North America the analogous plains north of the Gulf of Mexico are likewise well watered, the configuration in both cases favouring instead of hindering the

inward movement of moisture-bearing air. Coffee is the chief crop of the Highlands close to the tropic, while farther south cattle and sheep roam on the campos. On the plains of the Uruguay and Paraguay maize and wheat are cultivated in ever-increasing quantities; and in the north oranges, olives, vines, tobacco, and other warm temperate crops are grown. The thick forests are confined to the coast and wetter valleys; the Gran Chaco consists of opener woodland. From these much timber might be obtained if transport facilities were greater. The *yerba maté*, or Paraguayan tea, is the most notable spontaneous product. On the western and southern margins, where the rainfall is small, cultivation gives place to stock-raising, or the pampas are occupied by semi-wild horses.

The dry north-west must be divided into three parts: (1) The lands east of the Andes, whose snows supply water for irrigating the land, on which cotton, sugar, vines, and Mediterranean fruits of all kinds grow. This is a more favoured Mildura region. (2) The mountain area, with silver and other mineral ores. (3) The Chilean deserts, with important nitrate deposits.

Central Chile, with wet winters, resembles Victoria and the Cape peninsula regions in its Mediterranean type of climate and products, which make this the most flourishing part of Chile.

Southern Chile, with rain at all seasons, is a mountainous land cut up by many fiords, as in southern New Zealand, and bordered by islands separated from each other and the mainland by sounds. Here Scandinavian conditions are found nearly 10° nearer the equator. Fishing and the exploitation of the thick forests are not developed for lack of a market.

**Patagonia** is the dry south-western region, and is as yet hardly occupied. Stock-raising may well become important, and the lands where the chinook (cf. western Canada) influence is felt will be of agricultural importance when routes are opened to them. Sheep-farming is becoming important in districts within easy reach of Magellan Strait.

The **mineral wealth** is considerable in the Andes and in southern Brazil. Gold, silver, and copper are found in the Andes, and coal occurs in Chile near Concepcion, and lignite in the Argentine.

**Political Divisions.**—The republic of Chile occupies the western regions, Argentina the eastern, except where Paraguay, Uruguay, and southern Brazil extend in the north-east. The Falkland Islands are British.

**Chile.**—The dry northern region, where nitrates, largely worked by aid of British capital; and precious metals are the source of wealth, extends north of the tropic. The greater portion of a railway running throughout the length of the country has already been constructed, with branches to the various ports. Antofagasta is linked up, through Potosi and Oruro, with La Paz, the principal town of Bolivia, which, with the completion of the railway to Arica, will soon be brought within twelve hours of the Pacific seaboard. The Pacific ports provide the outlet not only for the trade of Chile, but also for much of the valuable mineral traffic of Bolivia; where the railway has not yet penetrated, or where the rates are prohibitive, the transportation across the Andes is largely carried out by means of animals, chiefly llamas, each of which is able to carry a load of 100 lb. Iquique and Taltal export nitrates, Caldera (port of Copiapo) silver, and

Coquimba (port of La Serena) copper. Antofagasta is a large railway centre and nitrate port; while great developments are taking place at Mejillones, an excellent harbour situated about forty miles to the north of Antofagasta. The shipments of nitrates from this port in 1910 exceeded 50,000 tons, and when the railway from Tupiza is completed, it will probably attract much of the traffic of the northern Argentine and Bolivia as well as of its own immediate hinterland.

The central valley of Chile is the agricultural region, and the export of wheat, which is the chief crop, now reaches a million tons per annum. Valparaiso, the principal port, is the western terminus of the trans-Andine route through Mendoza and Los Andes, and it is also connected with Santiago, the capital of the country, and Valdivia, by the Longitudinal State Railway. Coronel and Lota, adjacent to the Chilean coalfield, are coaling-stations; at the latter place the poorer coal is consumed in the local drain-pipe factory, glassworks, and copper foundry. From Lebu coal is shipped to the copper-smelting works at Guayacan. The output of the Colico mines is mostly sent to Concepcion for use on the state railways. Talcahuano, the port of Concepcion and the best harbour in Chile, is the principal arsenal and dockyard and the headquarters of the Chilean navy.

Nitrates, copper and copper ores, wheat, borates, iodine, leather, and wool are the chief exports; textile manufactures, machinery, coal, and subtropical produce are the leading imports. Most trade is carried on with the United Kingdom, followed by the German Empire, the United States, and France.

**Argentina** is a republic with a great variety of

physical and economic conditions. It consists of four distinct regions: (1) The subtropical region, which includes the northern provinces, and is mostly covered with natural forest. The chief crops under cultivation are alfalfa, maize, and sugar-cane; while considerable attention is given to the rearing of horned cattle, sheep, and horses. (2) The sub-Andine region in the west, where the vine is chiefly cultivated, and large quantities of alfalfa and maize are grown on irrigated lands. (3) The riverine or pampa region, embracing the great Plate basin, with the cultivation of wheat and stock-raising as the leading occupations. (4) The Patagonian region, extending south from the river Colorado, where stock-raising is the chief industry.

The Argentine now ranks as one of the great food-producing countries of the world, and it contributes a considerable proportion of the supplies of the United Kingdom. Flour-milling and sugar-making, meat-packing, dairying, and distilling are the most important industries. Cotton is being grown in the north, especially in the Chaco district, and several spinning and weaving establishments have been set up.

Gold, silver, and copper are worked in the provinces of Catamarca, San Juan, and Rioja, at the base of the Andes; coal and petroleum in Mendoza.

The agricultural development of Argentina has closely followed the extension of the means of transport; in building a great network of railways over the whole country enormous progress has been made since the first import of Argentine wheat into the United Kingdom in the early eighties. From Buenos Aires, the federal capital, on the Plate estuary, lines run southward to Mar del Plata and to Bahia Blanca, and

then up the Neuquen valley to the base of the Andes; westward to Mendoza, from which point a narrow-gauge line crosses the Andes to join the railway system of Chile; north-westward through Cordoba, Tucuman, Salta, and Jujuy to the Bolivian frontier, where the line is being continued to Tupiza to join the Chilean line from Antofagasta at Viacha; and northward to Resistencia, near the border of Paraguay. Innumerable lines connect these main railways, and minor traffic centres exist at Santa Fé, San Francisco, Cordoba, and Tucuman. The rivers also form navigable highways, and ocean-going ships can load at Rosario on the Paraná, as well as at Buenos Aires and Ensenada, the port of La Plata city, both on the shallow Plate estuary, which is difficult of access and requires constant dredging. With the opening up of the south-east Argentine, Bahia Blanca is rapidly becoming an important railway centre and a leading port for the shipment of wheat and pampa produce. It is proposed to establish an adequate naval and commercial port at Port Argentine, on the Bay of Samborombon.

Cereals, especially wheat and maize, cattle, dead meat, wool, and hides are among the most important exports; the chief imports are rolling-stock and agricultural implements, textiles, hardware, and building materials. The total trade of the Argentine now exceeds £140,000,000, of which the United Kingdom has the largest share, both in exports and imports; while Germany, the United States, France, Belgium, and Italy rank next.

**Uruguay** is the hilly land north of the Plate and east of the Uruguay. At present it is essentially a pastoral country, possessing vast flocks and herds. Wheat,

maize, and flax are cultivated on the flat lands, and their export is steadily increasing. Vine, olive, and tobacco cultivation is becoming more important. Several gold-mines are being worked in the northern departments, and lignite coal in the south; silver, copper, lead, magnesium, and petroleum also occur.

The chief industry is meat-preserving, carried on at Fray Bentos and Paysandu. Animal products, including meat (chilled, jerked, and in extract), hides, skins, wool, and tallow make up 90 per cent. of the exports, France being the largest buyer, then Germany, Belgium, Great Britain, the United States, and Italy. Argentina and Brazil, however, receive from Uruguay many exports which are re-exported. Great Britain sends about 30 per cent of the imports, mainly consisting of textiles, coal, and machinery; next in order come Germany, France, and the United States. A railway runs from Monte Video, the capital and the principal port, to Asuncion, the chief town in Paraguay; at Posadas the train is conveyed across the Paraná by means of a large ferry-boat. A line is also being built from the capital through Durazno to Rivera, where it will join the railway system of Brazil.

Paraguay, called the Mesopotamia of South America, lies between the Pilcomayo and the Paraná, and is traversed by the Paraguay. The state possesses abundant pasture-lands, well suited for stock-raising, which is a growing industry, especially in the Chaco. The conditions of soil and climate have proved favourable for cultivating *yerba maté*, or Paraguay tea, oranges, sugar-cane, maize, cassava, cotton, bananas, and peaches. Excellent timber is plentiful, and considerable quantities of quebracho extract for tanning

are exported, chiefly to Germany. Iron, marble, copper, gold, and kaolin are known to exist, but so far no attempt has been made to develop the mineral resources. The progress of Paraguay has been hindered by the cost and difficulty of transport, the country roads being little better than bullock-tracks, and by the heavy duties imposed on the produce by the countries through which it has to be conveyed to the sea-board. Now, however, a railway connects Asuncion and southern Paraguay with Monte Video and Buenos Aires. A line is under construction from the capital to the Brazilian sea-board at San Francisco. Steamers from New York call at Asuncion on their way to Matto Grosso, 3000 miles up the Paraná. Dried meat, hides, Paraguay tea, oranges, tobacco (chiefly to Hamburg and Bremen), and timber are the chief exports, trade being carried on through Argentina or Brazil with the outside world.

**Southern Brazil** resembles Uruguay, but plantations are more numerous, especially in the districts of former settlers. The rest of Brazil is described on page 144.

**The Falkland Islands** lie nearly 350 miles to the east of the eastern entrance to the Magellan Strait, and consist of two large islands and many islets. The climate is cool, stormy, damp, and foggy, and the islands are grassy, the tussock grass forming excellent fodder and hay. Sheep-farming is the chief occupation; wool, skins, and tallow the leading exports. Port Stanley, the capital, is on the east of the east island, and here ships damaged in the stormy regions off Cape Horn put in for repairs.

## CHAPTER XII.

## INDIA AND CEYLON.

**Position and Configuration.**—India consists of the central of the three southern peninsulas of Asia, and the regions immediately to the north as far as the Himalaya Mountains. Physically it is made up of three very different parts: (1) the mountains of the north; (2) the broad band of the alluvial and sandy Indo-Gangetic plains, never rising over 1000 feet, and varying in width from 100 to 400 miles; (3) the peninsular plateau of the Deccan, south of 25° N.

The rivers Indus, Ganges, and Brahmaputra all rise in the Himalaya Mountains and flow across the northern plains to the sea, which they reach across great deltas. The Deccan plateau is much higher in the west than in the east. It has a steep slope to the Arabian Gulf, and a long slope to the Bay of Bengal, down which flow the rivers Mahanadi, Godavari, Krishna, and Kaveri. The only important rivers to the west are the Narbada and Tapti, in the north. In the south the low Palghat Pass lies south of the Nilgiri and north of Cardamom Mountains, which form part of the Western Ghats or Sahyadri escarpment, and joins the eastern and western coastal regions.

**Climate.**—India occupies similar latitudes to the continent of Australia. If Ceylon be added to the former, we must add British New Guinea to the latter.

India, however, has the mountain barrier of the Himalayas on the polar side, whereas the polar side of Australia is bounded by the open ocean. This circumstance makes a great difference in the climate of the more temperate parts of the two countries. The mountains hinder, the ocean favours, the inflowing of winds from cooler regions. India is, therefore, hotter than Australia in the same latitudes.

The temperature of India varies comparatively little with latitude. The extra-tropical regions are, however, coolest in the northern winter, when their temperature is like that of England in June, and the north-west is hottest in summer. It therefore has the greatest range of temperature. The peninsular portion is uniformly warm at all seasons.

The north-west of India, like the south-west of Australia or South Africa, receives most rain in winter. So do the south-east of India and the east of Ceylon, lying in the track of the north-east trades, which have absorbed moisture in crossing the Bay of Bengal. The north-east trade-wind is the normal wind of the winter half-year; but in summer, instead of being intensified as is the south-east trade-wind of Australia, it disappears, and is replaced by a south-westerly or south-easterly monsoon wind, which moves towards the low-pressure centre formed over the region of greatest temperature in the north-west.

For most of India this summer monsoon brings the rain, so that, as in the greater part of Australia and South Africa, most rain falls in summer. In the extreme south-west of India and western Ceylon rains diminish in intensity towards midsummer, so that we

may speak of two rainy seasons. The single rainy season in the north is the equivalent of the equatorial rains of northern Australia.

The temperature in most parts of India, therefore, is favourable for all kinds of tropical and subtropical produce. The distribution of plants depends on the distribution of rain. There is no equivalent to the Mediterranean climate and produce of Australia or Africa, except in the extreme north-west, for the temperature of the south-eastern region, which receives rains during the northern winter, is never under 75° F. Owing to the configuration of India, the dry conditions which produce desert, found in Western Australia and South Africa, are confined to the region round the lower Indus. The peninsular part is exposed to the over-sea wind of summer, and only the eastern slopes of the Western Ghats are comparatively dry.

**Economic Divisions.**—The mountain barrier which encloses the north of India is wettest in the east, where it reaches farthest south, and is driest in the north-west. The vegetation therefore becomes less luxuriant from east to west. At the foot of the mountains in the east is a dense useless jungle called the Terai. Sal is the most important timber-tree in the forests of the lower slopes, followed by the deodars and other conifers of the higher forests, above which are rhododendron scrub and meadows moistened by the melting of the eternal snows. Tea is cultivated on the mountain-slopes of Darjiling and Kumaun, the latter in the basin of the upper Ganges. The mountains west of the Indus plain receive very little rain, and that mainly in winter. Wheat, millets, and many

fruits are cultivated in the valleys where irrigation is possible.

The western part of the **great plains** is desert or semi-desert, supporting a few sheep, goats, and camels. Round its edges, where the rainfall is slightly greater, and more particularly where irrigation is possible, wheat, oil-seeds, millets, maize, and even some rice are cultivated, the latter round the lower Indus. Irrigation is well developed in the Punjab and the upper half of the Ganges basin, where wheat is grown as a winter crop, and sugar-cane in summer. Pulses and millets are also cultivated, and some rice in the moister parts at the foot of the mountains. The cultivation of toria is rapidly extending in the Central Punjab. Cotton is grown along the Jumna, and indigo between the Jumna and the Ganges and in the region round the confluence of the Sutlej and the Indus. In the lower Ganges, east of Lucknow and Allahabad, rice is the most important cereal, and sugar-cane, indigo, and tobacco are among the principal crops. Opium is grown between Allahabad and Patna, and jute round the lower Ganges and Brahmaputra, and especially on the delta, where the soil, which is quickly exhausted by a crop of jute, is regularly renewed by the flood waters. In Assam, tea is cultivated in the valley of the Brahmaputra, and on the hills to the south, where rubber is also collected.

The **Deccan** may be divided into the western escarpments, which receive heavy summer rains; the drier grass-lands to the east; and the eastern slopes and coastal plains, with summer rains in the north and winter rains in the south. The western mountains and the hills in the wetter east have many teak-forests.

Millets (especially jowar and bajra), pulses, and oil-seeds (linseed and gingelly) are grown in all parts of the Deccan. In the hillier central region wheat flourishes, and cotton is grown south of the Narbada on a rich black volcanic soil which holds moisture easily, as well as in the lowlands of the Kathiawar peninsula. Sugar-cane also grows on this peninsula and in Mysore. Tobacco and indigo are cultivated on the eastern coastal plains. Rice is grown on all the low ground, and even on the hilly lands of the Mysore and the Central Provinces. Tea and a little coffee are cultivated in the Nilgiri and Cardamon Hills, and the cinchona is grown for the protection it affords to the young tea-plants, as well as for the 'Peruvian bark,' yielding quinine. Coco-nut palms flourish round the southern coasts.

In Ceylon the mountains are heavily clad with forests, and in the clearings tea, cacao, and cinchona are cultivated. Rice is of importance on the coastal plains, where the coco-nut and Palmyra (sugar-yielding) palms flourish, and cinnamon and tobacco are cultivated.

The hills of Burma are covered with immense forests of teak. Rice is the principal crop of the plains, where tobacco, millets, and pulses, and in the north some cotton and wheat, are also grown.

**Minerals.**—Coal is scarcely used at all in the indigenous industries of India, and is little needed for domestic purposes; but with the modern industrial expansion of the country and the rapid extension of its railways, there has been a remarkable development of the coal resources of India to meet the increasing demand for fuel, and coal has now become the most

valuable mineral in the country. It is not widely distributed, especially in the peninsular part of India. Over 85 per cent. of the total output, which has increased from six and a half million tons in 1901 to twelve and three-quarter million tons in 1911, is obtained from the Bengal fields, the chief centres being at Jherria, about 180 miles north-west of Calcutta, Raniganj, and Giridih. Of importance to the railways and the cotton-mills of Bombay and the Central Provinces are the coal deposits in the Pench Valley and at Mohpani, Warora, and Bellarpur in the Central Provinces. The Singareni mines, in the Nizam's Dominions, are the most productive outside the Bengal coalfields. A large output from Umaria, in Rewah, is almost entirely consumed on the Indian Midland and Bengal-Nagpur Railways. An extensive field is worked at Makum, in north-east Assam, the output being sent to Dibrugarh, on the Bramaputra, and another in the Swebo district of Burma. The most important deposits in the north-west of India are in Baluchistan, the chief mines being at Sor, near Quetta, Bolan, and Khost. Coal is also worked at Jammu in Kashmir, and at Bikanir in Rajputana. Gold occupies the second place on the list of Indian minerals. It is chiefly obtained in the Kolar district and other parts of Mysore. Salt is an essential mineral in a country like India. The greater part of the supply is obtained from sea-water by solar evaporation in the Rann of Kutch, on the Bombay coast in the west, and on the Madras coast in the east. About a fourth of the production comes from subsoil water and lakes, especially from Lake Sambhar and other parts of arid Rajputana and of Jodhpur, while one-

tenth of the output is obtained from the Salt Range of the Punjab. Considerable quantities of **Saltpetre** are found in Behar. Iron is widely distributed throughout India, but, so far, only those deposits in the neighbourhood of fuel-supplies have been extensively developed. Valuable ores are found at Salem, in Madras, but coal is not obtainable in the vicinity. Iron and steel works are being erected at Kalimati, on the Bengal-Nagpur Railway, where it is intended to utilise the ores from Mayurbhang, in Raipur, along with fuel from the Jherria coalfield. Meanwhile the only extensive development of Indian iron ores on modern lines is being carried out by the Bengal Iron and Steel Works at Barakar, where both ore and fuel can be obtained locally. Petroleum occurs in the Punjab and the United Provinces, in Baluchistan, and at Digboi and other centres in the Makum coalfields in Assam; but by far the most productive fields are situated in the valley of the Irawadi, the chief localities being Yenangyaung (which furnishes 80 per cent. of the total Indian output), Singu, and Yenangyat. 'India has for many years been the leading producer of Mica, turning out more than half the world's supply,' the chief sources being Bengal, Madras, and Rajputana. The country has also obtained an important place in the production of manganese, the output having increased from 171,000 tons in 1903 to 800,000 in 1910. The ore is mainly obtained at Panch Mahals, in Bombay, Jhabua, in Central India, Nagpur, and in the Sandur Hills in Madras. The whole output is shipped to be smelted in the United Kingdom, Germany, and the United States. Tin is rarely found in Peninsular India, but extensive deposits exist in Burma,

especially in the southern part of Tenasserim, whence it is sent to the Straits Settlements. The most important tin-fields are in the Malay Peninsula. Precious stones come from Burma and Ceylon; Burma rubies and Ceylon sapphires are celebrated.

**Manufactures.**—A country so populous as India naturally requires an immense supply of manufactured articles of many kinds. The great bulk of these is provided by native labour. In the nineteenth century, however, vast shipments of textiles, especially cottons and hardware, were made from the factories of Europe, especially from the United Kingdom. But since 1880, and especially since the opening of the twentieth century, a vast economic and industrial transition has been taking place in India. Numerous factories and mills have been built to manufacture locally grown cotton and jute into cloth, as well as mills for the manufacture of paper, the production and value of which has increased fivefold since 1880, and of woollen goods, for which, however, the demand in India is comparatively small. The majority of the cotton-mills are in Bombay Presidency, especially in the city of Bombay and in Ahmedabad. They are largely owned by Indians, and China forms the principal market for the yarn produced. The jute-mills, on the other hand, are mostly controlled by the British, and are mainly centred at Howrah, a suburb of Calcutta, which is rapidly becoming a serious rival to Dundee. In addition, there are numerous flour-mills (chiefly in the Punjab), breweries (the largest of which is at Murree in the Punjab Himalayas), rice and saw mills in Burma and elsewhere, sugar factories, silk filatures, and indigo factories, chiefly in Bengal, and printing-presses in

Bengal and Madras, into most of which mechanical power and modern methods are being introduced. Besides the advantages of producing the raw material and having a large market for the manufactured goods, India has plenty of cheap labour. Its disadvantages are (1) that this labour is not nearly so efficient as that of Europe, and in the long-run is almost as costly; (2) there is no local supply of coal in and around Bombay and Poona, where most cotton is manufactured; and (3) during the dry season the air is too dry for successful spinning, and has to be artificially moistened.

**Means of Communication.**—The rivers of southern India fluctuate greatly in volume in the dry and wet seasons, and enter the sea across flat deltas, so that they are of little use as means of transport, although invaluable for irrigation.

The Indus has a swift current and many shifting sand-banks, and can be used only by very shallow craft. The Ganges, on the other hand, is navigable to the very base of the mountains at Hardwar. The Ganges Canal, the upper part of which joins Hardwar to Cawnpore, and the lower part to Allahabad, with several thousand miles of branches, is used for irrigation, and on its main course also for navigation.

The Hugli is the distributary of the Ganges most used for navigation. It has a strong bore and many shifting sand-banks, and is kept open for ocean vessels as far as Calcutta only by constant dredging.

The Irawadi is navigable for river steamers as far as Bhamo, near the Chinese frontier. Ocean vessels sail by its western distributary to Bassein, and by its eastern one to Rangoon. The Salwin is navigable.

only for about 80 miles. Moulmein is the port on its left bank.

**Railways.**—There are at present over 32,000 miles of railway in India, the mileage having increased more than 30 per cent. during the decade ending 1910. Four gauges are used—the standard (5 feet 6 inches), the mètre gauge, and narrow-gauges of 2 feet and 2½ feet. From Bombay, the nearest port to Europe, a line runs northward to Baroda and Ahmedabad, through Rajputana, skirting the western base of the Aravalli Hills, to Delhi, the capital of India. A second line through Kotah and Muttra connects a rich grain-producing area in the Punjab and the United Provinces with the port of Bombay. A third line passes through the Khandwa Gap, in the Satpura Mountains, to Allahabad and Cawnpore. A fourth line through Nagpur gives direct communication between Bombay and Calcutta. A fifth line through Poona crosses the Deccan plateau to the coast of Madras, while a sixth runs southward to the Portuguese port of Goa. A line crosses the peninsula from Goa to Madras, and from the latter port a line runs southward to Madura and Tuticorin, and is continued by means of a viaduct across the Pambam Channel to the island of Rameswaram. From Madras a railway runs along the coast to Calcutta. The flat nature of the country has facilitated the construction of a great network of railways throughout the Indo-Gangetic plains. Main lines on both sides of the Ganges connect Calcutta with the Indus valley and with the extreme north-west of India; Delhi, Cawnpore, and Allahabad in the Ganges valley, Multan and Lahore in the Punjab, are important railway centres. From the main lines important

branches run to the foothills; from the Peshawar-Karachi line, branches run through the Bolan Pass and Quetta to the Afghan frontier. From Chittagong a line runs through eastern Bengal to the extreme north-east of Assam, and this system is being connected with that of Burma, which runs from Rangoon through the Sittang valley and Mandalay to beyond Bhamo. A short line follows the Irawadi from Rangoon to Prome. A railway runs throughout the length of Ceylon, with connections to the tea-plantations in the mountains.

**Irrigation.**—The Indus is to Sind what the Nile is to Egypt, and a great network of canals makes it and the Punjab fertile. The Ganges Canal, from Hardwar to Cawnpore, on the right bank of the main river, is 1000 miles long, with several thousand miles of branches, which irrigate the Doab (the region between two rivers) between the Ganges and the Jumna. The deltas of the great eastern rivers Mahanadi, Godaveri, Krishna, and Kaveri (Cauvery) are all canalised. Irrigation canals have also been constructed in the districts of Mandalay and Swebo, in Burma. Artificial lakes have been formed, and wells sunk in many parts for irrigation purposes. The irrigated land in India now exceeds 16 million acres. As a result of irrigation the Chenab colony, which was a wilderness in 1892, was able in 1907-8 not only to meet its own requirements, but also to export wheat, toria, and cotton to the value of £2,000,000.

**Trade.**—The land frontiers of India are difficult to traverse, and the trade carried over them is small.

From Quetta, goods of eastern manufacture are sent to eastern Persia by Seistan. Trade with Afghanistan is carried on from Quetta with Kandahar, and by the Khaibar Pass with Kabul.

Leh, on the upper Indus, trades with Chinese Turkestan over high passes more than two miles above the sea-level, but the trade is declining, owing to Russian competition. Cottons, mainly brought from Europe, are the chief import, and hides, skins, and carpets, and the drug charas, are the chief exports across these frontiers. The most trade with Tibet is carried on by the Chumbi through the frontier port of Yatung, and is slightly increasing. Some trade is done with eastern China through Kunlong Ferry.

The main trade of India, however, is sea-borne. In spite of its immense population, India exports large quantities of food-stuffs, more particularly wheat, that from the Punjab passing through Karachi, that from the Deccan through Bombay. Little rice is available for export in Bengal, but great quantities are shipped from the less densely peopled Burma. Tea from Assam and Darjiling, indigo, opium, jute, oil-seeds, and hides are exported from Calcutta. The tea, coffee, and tobacco of southern India are exported mainly from Madras. Cotton is one of the chief exports of Bombay. The growing industrial activity of India is shown by the fact that manufactured goods now form a considerable and increasing proportion of the exports. In 1879 manufactured goods formed 8 per per cent. of the total exports; in 1892 the proportion had increased to 16 per cent., and in 1907-8 to 22 per cent. During the same period manufactured imports had fallen from 65 to 53 per cent. of the total imports to India. Cotton manufactures, metals, machinery, and railway plant are by far the most important articles imported; next come sugar, mineral oils, hardware, provisions and liquors, silk and woollen goods and apparel.

Most of the import and export trade is with Europe,

especially with the United Kingdom. It is steadily increasing with Germany, and also with America, Australia, and Asia.

Ceylon is a crown colony, and is politically separated from India. Coco-nuts, rice, tea, cacao, and rubber are the chief items of cultivation, the last-named having become an important source of wealth within the last ten years; other valuable crops are cinnamon, coffee, and tobacco. Cotton, mango, and various fruits and vegetables have recently been introduced. Ceylon possesses considerable stores of precious metals and stones, and the pearl-fisheries are an important source of wealth. Cotton goods, coal, rice and other grain, and machinery are the chief imports. Ceylon tea is the chief export, but coco-nut products, plumbago, rubber, cacao, areca nuts, coffee, and quinine are also important exports.

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## CHAPTER XIII.

### CENTRAL AFRICA AND INTERTROPICAL SOUTH AMERICA.

THESE continental lands agree in possessing a very hot and in most parts wet climate, favourable to the growth of dense forests in the lowlands, and rich savanas on the uplands. At present, spontaneous forest growths (more especially rubber), ivory (in Africa), and hides are of economic importance. The unhealthy climate hinders the development of the lowlands by the white man, who has, however, formed some plantations in the higher regions worked by negro or imported coolie labour.

## CENTRAL AFRICA.

**Position and Configuration.**—Central Africa may be defined as lying between 15° N. and S. of the equator, between the Zambezi, the Niger, and Lake Chad. It consists of the Eastern Plateau of the Great Lakes and Abyssinia, over 4000 feet high; the Western Plateau of the Guinea Highlands; and the basins of the Zambezi, Congo, Upper Nile, Shari, and Niger.

The coast is regular, and bordered by a low plain, usually of no great width, above which the land ascends by steep escarpments to the plateau. The coastal plain, however, extends a considerable distance up the Zambezi and Niger valleys, both of which are difficult of access from the sea, from the shallowness of the distributaries of their mangrove-fringed deltas, and the dense, wet jungles of their lower basins. The Congo, on the other hand, enters the sea by a deep estuary, but the passage up the river is barred by a succession of magnificent cascades and rapids. Once the higher ground is reached, both the Niger and the Congo offer extensive waterways, to which the great lakes of the East African Plateau must be added. Railways are now being built from the coast to these internal waterways, and are described in the pages which follow.

**Climate and Vegetation.**—Throughout this region the air is always hot, except on the higher plateaus, where it is often cold at nights. Near the equator there are two dry and two wet seasons, the latter occurring when the sun is nearest the zenith at noon—that is, near the two equinoxes. Between Victoria Nyanza and Tanganyika there is no completely dry period.

Towards the northern and southern limits of the region the rainy season occurs at midsummer, while midwinter is dry. In the lowlands the rainfall is plentiful, and round the Guinea coast it is very abundant. Here the dense tropical forests are found. The higher plateaus have a much smaller rainfall, and are grass-lands (savanas) with wooded belts along the river-courses, and clumps of trees in the moister regions between the rivers.

The Congo-Zambezi Plateau is a rich savana-land, with dense river-woods. It is supposed to contain many economic minerals. At present it is practically unoccupied by the white man except in the Nyasa region and in the extreme west. In both coffee flourishes, and other tropical plants, including cotton, are cultivated on a smaller scale. Ivory is still obtained from the interior. In most regions roads are absent, and goods are carried by porters over narrow foot-paths. A road has been cleared between Lakes Nyasa and Tanganyika, and other roads have been made in southern Nyasaland; that to Chiromo on the Shiré connects with the steamers plying on the lower Zambezi, most of which use the Chinde distributary to reach the sea. Railways from St Paul de Loanda and Lobito Bay on the west coast are being extended towards the interior; and the transcontinental line from the Cape is already in operation throughout this region. From Beira a line is being constructed to the valley of the Zambezi. Politically the plateau is divided between Portugal and Britain.

Portuguese West Africa, or Angola, lies in the west. It is dry along the coast, but wetter on the loftier highlands, where coffee is cultivated and cattle are

reared. The province contains valuable deposits of petroleum, copper, iron, and salt. Its main exports are coffee, rubber (which, however, is gradually being exhausted), wax, vegetable oils, coco-nuts, and sugar, exported through St Paul de Loanda, Benguela, Mossamedes, Ambriz, and Lobito. From Loanda a railway runs inland to Malange. An important line is being built from Lobito Bay, which will eventually reach the mineral fields of the Katanga, in the Belgian Congo, and will be linked with the railway system of Central and South Africa.

North of the upper Zambezi is **Northern Rhodesia** (consisting of the former provinces of North-eastern and North-western Rhodesia), administered by the British South African Chartered Company. Its area is 190,000 square miles, but its European population is considerably under 2000 inhabitants. Rubber and cotton are cultivated in the neighbourhood of Fort Jameson and in the Kafue district. Tobacco is grown by the natives, and a wide variety of tropical and sub-tropical fruits can be cultivated. The plateau region offers excellent conditions for cattle-rearing. Gold, lead, copper, and zinc are the principal mineral deposits, and some coal has also been discovered. The eastern part of the territory is crossed by the trunk railway from Livingstone, the administrative centre, to the borders of the Belgian Congo. Roads are now being constructed, and the main rivers, the Zambezi, Kafue, and Chambezi, can be used for transport purposes.

**Nyasaland** (formerly the British Central Africa Protectorate) lies to the east of Northern Rhodesia and to the west and south of Lake Nyasa, and is one

of the most successfully organised and administered of intertropical colonies. Coffee is successfully grown, especially on the Shiré Highlands, and along with tobacco is exported in considerable quantities. Rice, maize, wheat, and other cereals are cultivated. The cultivation of cotton, both Egyptian and American varieties, is increasing. An extensive inland waterway is provided by Lake Nyasa and the Shiré River, the principal ports being Port Herald and Chiromo, Fort Johnston, Kotakota, and Karonga. A railway connects Port Herald with Blantyre, the chief settlement, and it will probably be extended to the shores of Lake Nyasa and to the seaboard in Portuguese East Africa.

Madagascar, a large island off this coast, twice the area of the United Kingdom, was declared a French colony in 1896. Its mountains run from north to south, and are steepest on the eastern side, which is also the wettest and most densely forested. Savanas prevail on the summit and in the south-west. The forests yield rubber, cattle feed on the grass-lands, the cultivated area produces all kinds of tropical plants, and the mineral wealth is believed to be great.

Gold, cattle, hides, tanning bark, rubber, raphia fibre, wax, and vanilla are the chief exports. The trade is carried on almost entirely with France and other French colonies. The chief ports are Tamatave in the east, and Majunga in the north-west.

The Plateau of the Great Lakes is over 4000 feet high, and is relatively dry. It is an open savana, which feeds immense numbers of cattle and sheep. Millet is the principal grain cultivated. In the lower lands round the Victoria Nyanza the banana flourishes.

The highlands to the east, rising to greater heights, are relatively healthy, and it is believed that the Nandi plateau of British East Africa is suitable for European settlement. The wet and malarial east-coast plain produces rubber.

The islands of Zanzibar and Pemba are noted for their spices, especially cloves.

Politically, the plateau is divided between Portugal, Germany, Britain, and Italy.

South of the River Rovuma and east of Lake Nyasa is Portuguese East Africa, which extends up the valleys of the Zambezi and Limpopo. The principal products exported are rubber, minerals, beeswax, and ivory. A large transit trade is carried on between the sea-board and the British possessions lying to the west of the territory. The leading ports are Lourenço Marques, an important coaling station, through which most of the sea-borne trade of the Transvaal Province passes; Beira, the terminus of a railway; Mozambique, Ibo, Chinde, and Quilimane. From Delagoa Bay a railway runs to Pretoria, and a line is under construction to the borders of Swaziland. From Beira a line runs westward into Rhodesia, and meets the trunk-line from Cape Town at Salisbury.

German East Africa lies between the Rovuma and the Umba. Rubber, vegetable fibres, ivory, and copra are the chief exports. Many plantations have been formed on or near the coast, where coco-nuts, coffee, cacao, vanilla, and other tropical plants are grown. Cattle-rearing is important in the highland regions. The ports are Dar-es-Salaam, the capital, and Pangani. A short railway runs from Tanga up the valley of the Ruvu to Moshi, at the southern base of Kilimanjaro.

From the capital a railway is in operation through Mrogoro and Kilimatinde to Tabora, and it is being prolonged to Lake Tanganyika.

The British territories consist of the protectorates of (a) Zanzibar; (b) British East Africa Protectorate, between the Uмба and Juba Rivers; (c) Uganda, round the Victoria Nyanza; (d) British Somaliland, south of the Gulf of Aden.

The town of Zanzibar is the commercial centre of East Africa.

In British East Africa tropical products are cultivated along the coastal belt and the river valleys; on the uplands almost all crops of the temperate zone can be successfully grown, and stock-raising is important. In the coastal belt, along the Tana River valley, and in the neighbourhood of Victoria Nyanza, the conditions favour the cultivation of cotton, and ginneries have been established at Kilindini, Malindi, and Kisumu. The cultivation of maize, wheat, and coffee is of increasing importance. The protectorate possesses valuable forest resources, and the growing of the black wattle has become an important industry.

The Uganda railway runs from Kilindini, one of the two ports of Mombasa, the largest town, through Nairobi, the capital, to Kisumu and Port Florence on Victoria Nyanza (585 miles). The Tana and Juba are navigable for small steamers for 400 miles. Transport from the coast to the lake, which was formerly effected by porters and took several weeks, is now reduced to three days. The present exports consist mainly of copra, ivory, rubber, hides, grain, and cotton.

The Uganda region is fertile round the Victoria Nyanza, and is rich in minerals, especially iron

and copper. Several sugar and coffee plantations have been successfully established. The protectorate promises to become an important cotton-growing country, and ginneries have been erected at Kampala; but the bulk of the seed-cotton exported is sent across Victoria Nyanza to the ginnery at Kisumu. Inland transport is entirely carried out by porters, who carry the crop to the ginneries in 60-pound loads. A short railway is being built from Jinja, at the northern end of Victoria Nyanza, to Kakindu, below the rapids on the White Nile, where the stream becomes navigable.

The **Somali Peninsula**, partly Italian, partly British, is grass-land, in some parts very poor. It is a pastoral land, and also produces myrrh and other fragrant woods. Inland transport is performed by camels. The British ports are Berbera, Zeila, and Bulhar.

The valleys of the **Congo Basin** are all covered with dense forest, supplying rubber and palm products. The higher ground between the river-courses is less densely wooded and better peopled. Most of the Congo basin south of the Ubangi-Welle and the main river from Stanley Pool to its mouth forms the **Belgian Congo**. It is bounded on the north by French Equatorial Africa, on the west by Uganda, Lake Tanganyika, and Northern Rhodesia, and on the south by Angola. The chief products are rubber, ivory, palm oil and nuts, gum copal, and cacao. The imports consist chiefly of cotton goods, provisions, and hardware. Important mining developments are taking place in the Katanga, an extensive plateau, with an average elevation of 5000 feet, stretching to the west and south-west of Lake Moëro. From Ruwe a broad

belt of rich copper-bearing land extends eastwards for 200 miles. North of the copper deposits, in the neighbourhood of Bukama, is an extensive tin region. Gold is being worked at Ruwe, Lake Kisalé, and at Kilo in the north-east. Coal has been discovered in large quantities in the copper zone of the Katanga and also along the valley of the Lukuga.

On the Congo estuary are the ports of Banana, Boma, and Matadi, above which there are numerous rapids. A port is being constructed at Kinshasa, on the left bank of the river, near Leopoldville. A railway joins Matadi to Leopoldville on Stanley Pool, beyond which the river is navigable to Stanley Falls. All the tributaries within the circle of which this is a diameter are navigable, affording over 6000 miles of waterway. Near the 2000-foot contour line almost all the rivers have rapids, which prevent communication by water with their upper courses, many of which have also long navigable reaches.

It is proposed to construct a railway from Stanley Ville southwards along the left bank of the Congo; two sections of the line are at present in operation—from Stanley Ville to Ponthier Ville (65 miles), and from Kindu to Kongolo (90 miles). The river is navigable between Ponthier Ville and Kindu. The Rhodesian railway has been extended across the Congo border to Elizabethville, and is being continued through Kambove to the mineral fields of Ruwe and Bukama. Thus at present much of the trade of the Katanga passes through Beira, but an important line is being built from Lobito Bay which will eventually provide an outlet for the Katanga on the west coast.

The **Guinea Coast** is one of the hottest and wettest

regions in the world. The forests are consequently very dense, and the climate most unhealthy for all men, especially for Europeans—who have called parts of it the 'White Man's grave.' This unhealthiness is a serious difficulty in the way of its being opened up by Europeans, who in the twentieth as in the fifteenth century are here still mainly traders.

The local trade is in palm oil and kernels and india-rubber. Coffee plantations flourish in Liberia, and have been planted in the German Kamerun colony, but most of the produce is still the natural growth of the forest. Any cultivated or manufactured articles at the ports have come across the unhealthy forest belt from the fertile and relatively healthy savanas of the Sudan.

The British colonies in West Africa are Nigeria, Gold Coast, Sierra Leone, and Gambia.

Nigeria, which includes the protectorates of Northern and Southern Nigeria and Lagos, is drained by the lower Niger, with its tributaries the Benué, Kaduna, and Sokoto, and by the Wobé, flowing into Lake Chad, in the north-east. The northern part of the country consists of great lofty plains, dotted with trees, frequently interrupted by conical or table-shaped hills, similar to the kopjes of South Africa, and belonging to the Sudan region; the southern part includes the great delta of the Niger. The forest products, especially palm oil and kernels, and also rubber and mahogany are among the most valuable exports. The principal cultivated crops are cotton, coffee, cacao, and maize, but serious damage is sometimes caused by the cold, dry, dust-laden harmattan, which prevails from November to March. Cattle-rearing is extensively

carried on throughout the plains, and large quantities are exported. Ivory is a valuable export from the Benué River. The cotton industry is extending, and large ginneries have been established at Zaria and Lokoja. The minerals of the country are now being developed, and the tin-fields of Bauchi, Kano, and Zaria are becoming an important source of wealth. Silver, coal, lead, and monazite are also found.

In Northern Nigeria are some of the largest towns of Africa, with a flourishing trade entirely in native hands. The Hausas are the great traders of the Sudan, and their trade-routes extend to the Mediterranean and Red Seas, as well as to the Gulf of Guinea. Sokoto, on the Sokoto; Kano, farther east; Bidz, near the bend where the Niger turns southward to its delta; and Yola, at the head of navigation on the important Benué, a left bank tributary of the Niger, are the chief centres.

The sea-going trade passes through Lagos, where the bar is being dredged to allow ocean steamers to enter the port. The other principal ports are Akassa, Brass, and Calabar. A railway runs from Lagos, through Ibadan, crossing the Niger at Jebba and the Kaduna at Washishi, to Zaria, and on to Kano. A branch joins this line from Baro on the Niger. A short line which connects the Bauchi tinfield with Zaria is being extended to Bukuru.

The Gold Coast still deserves its name, for gold is obtained from the sand of its shores, as well as inland, near Tarquah, and in Ashanti. There is a railway from Sekondi, through the Tarquah goldfield, to Kumassi, and from Akra, the chief port, to Mangoase.

Sierra Leone is bordered by lagoons with much local

traffic. Rice and cassava are the staple crops. The capital, Freetown, is built on the best harbour in West Africa. From the capital a railway runs through Bo to Pendemba, with a branch to Rawalla.

The small **Gambia** colony is completely surrounded by French territory. Ground-nuts form the chief export.

The **Sudan** is the North African region having a rainy summer and a dry winter season, with rich grass-lands in the south, and poor grass-lands in the north, passing gradually into the desert. It has greater extremes of temperature, a smaller rainfall, and a more healthy climate than the Guinea coast. It is fruitful and well cultivated, producing sorghum and other millets. Flocks and herds are numerous, and the natives in the Niger basin are skilled workers in leather, as well as expert manufacturers of cloth. It may be divided into three parts—the Western Sudan, drained by the Niger; the Central Sudan, drained to Lake Chad; and the Eastern Sudan, drained to the Nile.

The **Western Sudan** consists of the Niger basin, the upper part of which is French, the lower part British. Of the British Niger protectorate, Southern Nigeria belongs to the Guinea coast region, Northern Nigeria to the Sudan. The natural productions of the Sudan are many and varied. Rubber and palm oil and kernels in the south of the western portion, gums from the desert confines, the manufactured leather and cloth, and even some slaves, from the central populous strip, are exported. Cotton goods, hardware, and vile alcohol are the chief imports, most coming through the Guinea ports. The French have built a railway from Kayes and Bufalube on the upper

Senegal to Nyamine on the upper Niger, which taps much of the trade of the Western Sudan, formerly reaching the Guinea coast or going northward across the desert. Caravans still cross the desert, starting from centres such as Timbuktu in French territory, at the northern bend of the Niger.

The Niger is an international waterway, whose chief trading centres, in addition to those mentioned above, are Idda, Asaba, Akassa, and other ports on the delta in Southern Nigeria.

**French West Africa**, in the widest sense, reaches the coast in French Equatorial Africa, Dahomey, the Ivory Coast (*Côte d'Ivoire*), French Guinea, Senegal, and Mauritania, which extend a considerable distance inland, beyond which the greater part of the French Sudan, west of the middle Niger and east of Lake Chad, and the Sahara west of the Tibesti or Tarso Mountains, form the military territories and protectorate of the Chad. These territories are slowly being developed, and the older colonies now pay their way. The principal economic products are rubber (mainly from French Guinea), ground-nuts (from Senegal), rice, palm oil and kernels, and various tropical and subtropical fruits. Cattle-rearing is carried on by the tribes on the higher lands, and hides are exported. French Equatorial Africa is densely forested, and this prevents easy communication from Libreville, the chief port, to Brazzaville on Stanley Pool. A railway from Kotonu to Say is being continued to Charu, on the Niger in Dahomey. Port Bouet is the chief port on the Ivory Coast, from which a railway has already been built to Dimbokro. French Guinea includes the Futa Jallon Highlands,

where cattle are reared. A wharf has been built at Konakry, and a railway is completed as far as Kourassa on the Niger. St Louis, the capital of Senegal, is joined by railway to the excellent port and fortified coaling station of Dakar at Cape Verd, and the Senegal River can be ascended to Kayes in the rainy season, from which a railway is built to Koulikoro to tap the trade of the upper Niger, and to Thies and Ambidedi.

**German Guinea** consists of the Kamerun colony and Togoland. In **Kamerun**, plantations of coffee, cacao, rubber, and tobacco have been made on the fertile slopes of the Kamerun volcano, where an experimental garden has been formed. Palm-oil, coco-nuts, and kola-nuts are also valuable products. Cattle-raising is carried on in the uplands of the interior. From Duala, the capital and leading port, railways have been built as far as Bamum in the north-east and through Edia to Widimenge on the Nyong. In **Togoland** the forests supply valuable dye-woods, rubber, and palms; plantations of cacao, coffee, and coco-palms have been established. The chief trade is in palm oil and kernels and gum. In both colonies there are extensive areas where cotton-growing can be successfully carried on. From Lome, the principal port in Togoland, a railway runs along the coast to Little Popo, and another line has been built as far as Palime in the interior.

**Portuguese Guinea** consists of the Bissagos (Bijagos) archipelago and the land lying to the east; but more important possessions are the productive volcanic islands of St Thomas (São Thomé) and Principe in the Gulf of Guinea, yielding cacao, coffee, vanilla, quinine,

and rubber, and Cape Verd Islands, also volcanic, less liberally supplied with rain, but producing coffee.

The **Spanish Islands** of Fernando Po and Annobon resemble St Thomas.

**Liberia** is a negro republic between Sierra Leone and the Ivory Coast, exporting coffee, cacao, sugar, rubber, palm oil and kernels, and other forest products. Important concessions have been granted to a British firm of soap manufacturers for gathering and preparing the fruits of the palm. There are no roads in the country, and transport is performed by porters over native paths, which are frequently closed through tribal disputes. 'Labour is scarce and expensive, and it is probably the worst in the world.'

The **Eastern or Nilotic Sudan** extends south of Egypt to the northern frontiers of Uganda and the Belgian Congo, and from the Red Sea to the western limits of Darfur. In the north cultivation is confined to the narrow belt along the river-banks. From the palm groves of Dongola province dates are exported in large quantities to Egypt, and form one of the most remunerative crops. Dhura, the staple food of the natives, sown immediately after the annual inundation by the Nile, wheat, barley, ground-nuts, and castor-oil are also important products; these crops require irrigation, usually provided by Persian water-wheels worked by three or four pairs of oxen, enabling the water to be raised day and night.

On the lands watered by the floods of the Khor Baraka, which flows into the Red Sea, and by the River Gash, valuable cotton crops are raised, especially in the Tokar district.

The slopes of Darfur to the north of Bahr-el-Ghazal

have only a short rainy period, are arid, and gradually pass into desert. Gums are here the chief economic product, but much attention is now given by the nomadic Arabs to the rearing of cattle, either for transport purposes or to meet the demand for meat in the large centres of population.

In the Southern Sudan, between the Blue and the White Nile, stretches the vast Gezira plain, which has been proved to be admirably suited for the cultivation of cotton on a large scale. Steps are being taken to run a great irrigating canal through the centre of the Gezira, and to extend the railway facilities. The tropical reaches of the upper White Nile, Sobat, and Bahr-el-Ghazal form great swamp-lands which, when drained, are well adapted for the cultivation of rubber, rice, sugar, and other tropical products.

The Nile is navigable throughout this region from the foot of the falls at Lado to Khartum, but occasionally transport is interrupted by masses of vegetation—the sudd—which block the river; it has been suggested that the sudd could be used for fuel.

The railway from Wadi Halfa is continued southwards along the right bank of the Nile to Khartum; at Hillet Abbas the line crosses the river and runs westwards to El Obeid. From Atbara Junction a line has been built to Port Sudan and Suakim on the Red Sea. The Eastern Sudan is now controlled by Anglo-Egyptian authorities.

The Abyssinian plateau is high enough to have a temperate climate in its upper districts. Rain falls heavily in summer, and the flooded rivers carry away large quantities of the rich volcanic soil, to be deposited as fertilising mud on the plains of Egypt.

Tropical fruits, such as the banana, and vegetables, such as sweet potatoes and yam, can be cultivated in the tropical and subtropical valleys; and cotton, coffee, and sugar are also grown. Temperate fruits and cereals are grown at higher elevations. Barley yields the chief crop. Shepherding, however, for which the country is admirably suited, is the chief occupation, sheep and goats being largely kept. The country is not yet developed in the European sense, and progress is hindered by bad roads and over-taxation. The king claims a tithe of such produce as ivory, coffee, beeswax, and musk. The imports are various kinds of manufactured articles. The French have built a railway from near Harar, the eastern trade centre, to their growing port of Jibuti (*Fr.* Djibouti), nearly opposite Aden, at the entrance to the Red Sea, and it is being continued to Adis Abbaba, the headquarters of the administration.

#### NORTHERN SOUTH AMERICA.

**Configuration and Economic Divisions.**—South America north of 15° S. is bounded by the lofty Andes on the west. The east consists of the lowlands of the Amazon and Orinoco, with the Guiana Highlands and the northern portion of the Brazilian Highlands. It thus contrasts with Africa, the Congo basin lying from 1500 to 2000 feet higher than that of the Amazon. South America is more subject to oceanic influences than Africa, and has a smaller range of temperature and a greater rainfall. The forests of the Amazon and of the north-east coastal plains are even denser than those of the Central African valleys. They

abound in rubber, and yield much more timber, which is floated down the great rivers. The deltaic lagoons of the Guiana coast produce excellent sugar.

The Eastern Highlands and the lowlands farthest away from the equator, both with a marked dry season, are savana-lands. Cattle and horses are kept, especially on the llanos of the Orinoco. Coffee is cultivated in the south of the Brazilian Highlands and on the wetter eastern slopes of the Andes. The Andes are so high that products of every climate can be cultivated on their sides. The most important, in addition to coffee, cacao, and sugar round the base, is cinchona.

South America, like North America, is a continent of excellent waterways. The Amazon is navigable for 2300 miles from its mouth to Iquitos for ocean steamers, and for nearly 500 miles higher to Ackual Point at the foot of the Andes for vessels drawing 14 feet of water. Beyond this the Manseriche rapids practically arrest navigation, but occasionally a small steamer ascends them. All the great tributaries are also navigable for a considerable distance from the main river. A line of falls, which can be traced both south and north on any good map, separates the lower from the upper navigable reaches. The Madeira is the most important of the tributaries. The Orinoco and its tributaries, the Apure and Meta, are also navigable, so that the whole of the eastern slopes of the Andes are most economically reached by the great rivers. The Magdalena and Cauca are routes to the branching ranges of the Colombian Andes from the north. Few railways have yet been built. The eastern states of this region are Brazil; French,

Dutch, and British Guiana; and Venezuela. The western or Andean states are Colombia, Ecuador, Peru, and Bolivia.

Brazil is a vast country, larger than Australia or the United States without Alaska. It occupies the southern and eastern slopes of the Guianas, nearly all the lowlands of the Amazon basin with their dense wet jungle, and the Brazilian Highlands. The forests yield much india-rubber, especially in the valley of the Madeira River, but the area from which it is obtained is gradually becoming more distant from the main streams, and attempts are being made to cultivate it round Pará. Coffee is one of the most valuable products of Brazil, which furnishes three-fourths of the world's supply, mainly from the state of São Paulo. Cacao is largely cultivated in the northern states, and the country is now one of the leading sources of the world's production. Pernambuco is the chief centre of the sugar-cane culture. Increasing quantities of cotton are cultivated, mainly in the coastal states; over 50 per cent. of the output is consumed in the mills of Brazil. Rice is extensively grown in the valleys of São Paulo. A few years ago this state imported the bulk of its supplies from India; now it can export about 12,000 tons annually. Tobacco is an important crop in the northern Highlands and in Bahia. *Yerba maté* is widely grown and exported in large quantities, chiefly to Argentina. Cattle flourish on the opener campos. Brazil diamonds were famous before those of South Africa were discovered. Gold is worked in nearly all the states, and rich copper deposits occur in Rio Grande do Sul, where smelting-furnaces have been established. Brazil provides the greater part of the

world's supply of monazite, which is extensively used in the manufacture of incandescent mantles. Silver and mercury are also obtained. Iron ores, both hematite and magnetite, are known to exist (in Minas Geraes, Bahia, São Paulo, and other states), but they remain undeveloped on account of the lack of good fuel. Coal of an inferior quality is obtained in the southern states. Hitherto Brazil has been dependent upon imported coal for industrial purposes, but now increasing use is being made of the abundant water-power in the country, as a result of which important industrial developments are rapidly taking place. Among other schemes steps are being taken to supply electricity from the Piabanha Falls not only to Rio de Janeiro (the chief town and port), Niteroy (with its important woollen and cotton factories), Petropolis (where the silk industry is carried on), and Mage, but also to the Central Railway of Brazil, and to the naval establishments on the islands in the beautiful and commodious harbour of Rio de Janeiro. From the capital many railway lines run across the plateau, one passing through the coffee districts of São Paulo to the port of Santos, from which much of the crop is shipped. Coffee is by far the most valuable export, forming 47 per cent. of the outgoing trade. Rubber supplies 27 per cent. of the exports, most of it being shipped to London, where it is redistributed. Manaus is the rubber-collecting centre for the Middle Amazon. *Yerba maté*, leather and hides, tobacco, cacao, cotton, and sugar are also valuable exports. The chief imports are manufactured goods of all kinds, iron and machinery, coal, wheat and flour, jerked beef, wines, and other foodstuffs. The chief trade is with the

United States (the exports being about four times the imports), Great Britain, and Germany.

The Guianas produce sugar, cacao, rice, mahogany, rubber, coco-nut, gold, and some diamonds. Georgetown, the capital of British Guiana, is the most important centre.

In Venezuela coffee is the staple crop, and sugar ranks next. The slopes of the mountains are cultivated with cacao, cotton, indigo, rice, and, at higher levels, barley. Rubber, excellent timber, and many valuable tropical products, such as copaiba balsam and vanilla, are produced in the forests. Cattle are kept on the vast savanas of the Orinoco, and frozen meat is now exported from Puerto Cabello. Gold is found in the east of the Guiana Highlands. Copper, silver, and iron are plentiful. Coal is obtained near Barcelona and at Coro. Important petroleum deposits in the vicinity of Maracaibo supply the local demand for illuminating and lubricating. The chief town is Carácas, only eight miles from its port of La Guaira, which is reached by a railway twenty-two and a half miles long, which zigzags over the mountains. From Carácas lines also run to Santa Teresa and Valencia, which is connected with Puerto Cabello. Of the other short lines the most important are from Tucacas to Aroa, and to Barquisimeto, and from Encontrados to La Uruca. Maracaibo exports coffee, cacao, and sugar from the districts around the lagoon of the same name, at the mouth of which it is built. Rubber and balata, chiefly from the upper Orinoco and the Rio Negro, and hides are also important exports. The Orinoco is an excellent route to the interior at present very little used. Venezuela is comparatively healthy for

Europeans, but its population is too small for rapid development.

Colombia, Ecuador, and Peru are situated in the western Cordilleran area. The great impediment to their development is the difficulty of transport.

In Colombia there are less than 700 miles of railway, and the roads are of the worst description. The Magdalena, which is being partly canalised, is the most important means of transport. The mineral wealth is considerable. Gold, silver, and platinum are exported; copper, lead, manganese, cinnabar, and emeralds are also mined. Petroleum and asphalt are found. Coffee, sugar, cacao, and tobacco are grown, and within recent years banana cultivation has become important. Rubber is a valuable export. The imports are manufactured goods of every kind. Bogotá, the capital, lies on a lofty plateau. Medellín is the centre of the mining province of Antioquia. Barranquilla, near the mouth of the Magdalena, and Puerto Colombia are the outports of that river-basin. Cartagena at present dominates the western trade. When the Panamá Canal is opened, the commercial relations of the Pacific states of Colombia will increase in importance.

Ecuador is even more backward in respect of means of communication. Cacao is the leading agricultural product and principal export from Guayaquil, the chief port. Rubber, coffee, and sugar are also cultivated. Minerals are abundant, but little worked. Cacao, ivory-nuts, and rubber are the leading exports; while manufactured goods and foodstuffs are the chief imports. The manufacture of Panamá hats is extensively carried on, and they form one of the

principal exports. Most of the rivers are navigable on their lower courses for small craft. A railway connects Durran and Quito, the capital, built on a lofty plateau; another line runs from Puerto Bolivar to the cacao districts.

Much of western Peru is a rainless desert, fertile where irrigated by water from the many rivers from the Andes. Cotton, coffee, and sugar are the chief agricultural products. The cultivation of cotton is being extended under irrigation. Coffee and cacao are grown on the eastern slopes of the Andes. Sugar and rice are extensively cultivated in the coastal region. Coca is a valuable product in the Otuzco district, and cocaine is manufactured at Lima, the capital of the country, and at Callao, the chief port, from which large quantities are exported. Other medicinal plants, including cinchona or Peruvian bark, dye-woods, and rubber are obtained in the tropical forests. Wool is obtained from the sheep, llama, and the alpaca goat, and exported in considerable quantities. The country is very rich in minerals, of which copper is at present the most important, but better transport facilities are necessary for their further development. The output of petroleum from the Lobitos and Negritos is increasing. The leading mining centre is Cerro de Pasco, which is connected by railway with Lima and Callao, and also with Oroya, from which point a line is under construction to Ayacucho. A line runs northwards along the coastal belt from Lima to Huacho, and a railway from Chinbote, on the coast, to Recuay is nearing completion. Most of the trade of Peru is done with the United Kingdom, followed by the United States and Germany.

**Bolivia** consists of a plateau, the eastern ranges and slopes of the Cordilleras, and the lowlands at their foot. It is a rich mineral country, especially in the Cordillera region. Large quantities of silver are produced, the mines at Potosi having long been famous. Bolivia now ranks as the second tin-producing country in the world, and furnishes over 20 per cent. of the total supply. Oruro, to the north of Lake Poópo, is the chief centre. Bismuth and copper are important, and lead, zinc, antimony, and some gold are also worked. The eastern provinces produce coffee, cacao, sugar, tobacco, and fruits. The forests yield abundant timber, Peruvian bark, and rubber, the bulk of which is exported through Amazonas. Cattle-rearing is important on the plains; great numbers are annually sent to the Argentine or driven across the Andes to the ports of Chile. Bolivia has no seaboard, and its traffic is carried through the adjacent countries by the eastern rivers, or across the mountains to the Pacific ports. La Paz, the capital, is connected by rail with Arica, and, through Lake Titicaca, with Mollendo; while the principal line in the country runs from the capital, through Viacha and Oruro, to Antofagasta. A branch from Potosi joins this main line at Rio Mulatos. A line eastwards from Oruro will meet the railways of Brazil, and another line, through Potosi, will join the Argentine system, which already extends to the borders of Bolivia. An important railway is projected along the right bank of the Madeira, from the mouth of the Beni to S. Antonio, which will open up a rich agricultural district. The chief customers of Bolivia are the United Kingdom, Germany, and the United States. Minerals, especially tin, form the most valu-

able exports; then rubber, cacao, cattle, and hides. The imports mainly consist of foodstuffs and manufactured goods, including railway stock.

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## CHAPTER XIV.

### INSULAR AND PENINSULAR LANDS BETWEEN THE TROPICS

(Excluding Peninsular India).

THESE differ from the regions described in the last chapter in being islands, and not parts of vast continents. Oceanic influences are all-important. The temperature is uniformly high, and differs little from day to night or from season to season, and the rainfall is usually high.

The East Indies are the insular equivalents of the Congo and Amazon basins. The West Indies and the Philippines, lying nearer the tropic, are the insular equivalents in the northern hemisphere of tropical Queensland.

In the East Indies the native population is large and at different stages of civilisation. In the West Indies the native population has been exterminated and its place filled by negroes of African descent. The West Indies and the northern Philippines can be settled by whites, but cultivation is entirely carried on by native labour. The exports are tropical timber, fruits and other agricultural products. Cottons and hardware are the chief imports.

## THE INDO-CHINA PENINSULA.

The Straits Settlements consist of the islands of Penang and Singapore; Wellesley, the Dindings (partly insular), and Malacca on the Malay Peninsula; and the Federated Malay States, under British protection, of Perak, Pahang, Selangor, and Negri-Sembilan, to which must be added the state of Johore, in the south, and the Siamese Malay States, in the north. The centre of the Malay Peninsula is traversed by a mountain-range, from 3000 to 6000 feet high. It is colder and wetter (100 to 200 inches per annum) on its upper slopes than nearer the coast; but everywhere the climate is equable, with cool nights. Rainy seasons occur over the whole region when the sun is at the zenith, and in the east there is also a rainy season when the north-east trades prevail. The forests produce gutta-percha, rubber, resin, rattans,\* and excellent dye-woods and hard timbers, especially between 1000 and 2000 feet above sea-level. Cattle are reared for draught purposes. Tin is the most valuable mineral product of the Malay Peninsula, which is the chief source of the world's supply.

The native Malays are hunters and collectors of forest produce. There has been a remarkable development of the rubber industry since 1907. During the four years ending 1910 the weight of the rubber exported increased more than six times, and now exceeds 65,000 tons. Most of the agriculture and mining is done by Chinamen and Tamils from southern India. Sugar and rice are grown in large quantities.

A railway of metre gauge, running parallel to the coast from twenty-five to fifty miles inland, connects Penang with Singapore. Branches are built or projected to meet the trunk-line from the coast at Port Weld, Lumut, and Teluk Anson in Perak, Port Sweetenham in Selangor, and Port Dickson in Negri-Sembilan. Important branches also run to Kuala Lipis, in the centre of the peninsula, and down the valley of the Pahang River to Pekan on the east coast. Bullock-carts carry merchandise beyond the railways. Tin and spices are the chief exports.

Penang and Singapore are the chief commercial centres and ports of call for steamers passing through the Malacca Straits. Singapore is one of the greatest 'shipping junctions' in the world. It is a free port, in regular communication with Japan and China in the north-east, the Malay Archipelago and Australia in the east and south-east, with India and, by the Suez Canal, with Europe in the north-west, and with South Africa and with Europe by the Sunda Strait in the south.

Siam is a mountainous land with alluvial plains occupying the basin of the Menam, and having under tribute the states in the middle part of the Malay Peninsula. It has a monsoonal climate. The most important product of its damp, fertile, alluvial plains is rice; of the dense forests which cover much of the country, teak. Gold, rubies, and sapphires are found, and tin-mining is steadily developing. Rice, teak, and hides are the chief exports, and manufactured articles, treasure, foodstuffs, sugar, and opium the chief imports. Bangkok, the capital, is the trading centre on the Menam. Rivers and canals

are the chief means of communication, but railways are extending. From Bangkok a line follows the left bank of the Menam to Meh Tuak; another runs north-east to Korat, another east to Petriu, and a fourth goes south-west through Petchaburi towards southern Siam. Small branches connect the capital with the coast.

Great Britain now exercises suzerain rights over the Siamese Malay States of Kelantan, Trengannu, Kedah, and Perlis, thus establishing British protection from the Persian Gulf to the Gulf of Siam. A line is to be constructed through this territory to connect the railway systems of Siam and the Federated Malay States. Rice, coco-nuts, and betel-nuts are widely grown and exported. Gold and tin are found. Cattle-rearing is important, and the natives along the coast are expert sailors and fishermen.

**French Indo-China** consists of Cambodia, Cochin-China, Annam, Tongking, Laos, and the French territory in China at Kwangchou east of the Leichou peninsula. The Mekong River runs along its western margin, and will form an important route to a yet practically unopened land. The hilly land to the east is well wooded, and supplies teak, camphor, and rubber. Coco-nuts grow round the coast, and the Mekong, Red River, and other deltas are fertile if unhealthy regions, producing much rice, sugar, maize, and cotton. The narrow Annam coast is less fertile, and fish form the chief food of the inhabitants. Coal is mined in Annam (at Tourane) and at Tongking (at Hongay and Kebao).

Saigon, north of the Mekong delta in Cochin-China, is the chief port in the south; Hué, in Annam, is

the leading town in the centre; Hanoi and its port of Haiphong are the chief places of Tongking. A railway from Saigon to Mytho is being carried to Cantho, and another line runs to Langbian. An important railway follows the valley of the Red River from Haiphong to Lao-Kai and into Yunnan. From Hanoi there is a line running north to Lang-Son, and another south to Vinh. Tourane is connected by rail with Quang-tri and with Faifu.

The chief trade is in rice, exported to the Philippines, Hong-kong, and China, as well as to France. Pepper, fish, hides, tin and coal, cotton, sugar, and rubber are also exported. The imports of manufactured goods come mainly from the United Kingdom, United States, and Japan.

#### THE EAST INDIA ISLANDS.

Except Borneo and Celebes, most of these mountainous islands are volcanic. The soil is fertile. Always hot, and almost always wet, they are covered with rich forests on the plains and in the valleys, with open woods and savanas on the higher ground. The coastal lands produce coco-nuts, and the low lands bananas and tropical fruits, sago, bamboo, and many useful timbers. Coffee, tobacco, sugar, and rice are cultivated.

The Dutch East Indies form the most important part of the East India Islands. They consist of Sumatra, Java, part of Borneo, Celebes, the Moluccas, the western part of New Guinea, and the smaller Sunda Islands, with the exception of the eastern part of Timor, which is Portuguese. Java, although not the largest, is the most important of these possessions,

and a brief account of it may be applied with modifications to most of the others.

**Java** is a volcanic island about the size of England, with a uniformly high temperature and an abundant rainfall, which is heaviest in the south and west. Its rich soil is very fruitful, and is carefully irrigated, drained, and cultivated, so that this 'garden of the East,' although a purely agricultural country, supports a population resembling in density that of England. A quarter of the land is cultivated. Rice and maize occupy the greatest area. Sago is found in the west, and coco-nuts round the coast. Above the plains coffee, tea, cacao, sugar, tobacco, indigo, and cinchona are cultivated. Coffee, sugar, and cinchona are of especial importance. Since the troubles in Cuba, Java has been the greatest producer of cane-sugar, and it is by far the most important source of quinine. The forests contain many valuable trees, such as teak, bamboo, camphor, and rubber. The higher grasslands support many cattle and buffaloes, whose hides form an important export. Tin, oil, and coal are the chief mineral products.

The leading port is Batavia, from which a railway runs to all the chief centres of the island.

**Sumatra** is more extensively covered with dense forests. Coffee and tobacco are cultivated; coal is worked at Ombilin. Its chief ports are Padang and Benkulen on the west coast.

**Banka, Billiton, and Riouw** have rich tin-mines.

**Dutch Borneo and Celebes** are also largely covered with forest, but are cultivated here and there, coffee and cacao being the chief crops.

The **Moluccas** have long been termed the **Spice**

**Islands**, and are noted for pepper, nutmeg, and cloves, the last named coming chiefly from the small island of Amboina, to which at one time the Dutch confined their cultivation.

The trade of the Dutch East Indies is mainly with the Netherlands.

**British Borneo** consists of the north-western protectorates of Sarawak and Brunei and the northern lands of the British North Borneo Company. Coconut, coffee, tobacco, Manila hemp, tapioca, pepper, and gambier plantations have been formed; sago and rice are grown for food; while raw forest produce, especially timber, rubber, and wax, in addition to bêche-de-mer, or trepang, and edible birds'-nests, are the chief natural productions. The mineral wealth is great, including coal, gold, silver, diamonds, and quicksilver. A short railway runs inland from Brunei Bay, where coal is found, to the interior, and thence to Jesselton on Gaya Bay. Sandakan, in the north, Jesselton and Kuching, the capital of Sarawak, in the south, are the other important centres.

**British New Guinea** is the south-eastern part of the large island lying off the north of Queensland, to which it is politically attached. The country is densely forested and little opened up. Coco-nuts grow round the coasts, the sago-palm is abundant, and some coffee, tobacco, sisal hemp, and cotton are cultivated. Copper-mining is increasing; gold has been found, and in some places is obtained by dredging. Port Moresby is the chief centre and port.

**Kaiser Wilhelms Land**, or German New Guinea, lies to the north of British New Guinea, which it resembles in its productions, its possibilities, and its present

almost unexploited condition. Gold occurs in the Bismarck Mountains. The plantations include coco-nut, cotton, tobacco, rubber, and coffee. Friedrich Wilhelmshafen is the chief port. With German New Guinea we may include the New Britain or Bismarck Archipelago to the immediate east, where the administrative centre of these German territories is situated at Herbertshöhe.

The **Philippines** were formerly Spanish, but now belong to the United States. They lie between 4° and 20° N., and consist of many islands, of which the largest is Luzon, which is mountainous; while Mindanao, the next in size, is at present less important commercially than the smaller Visayan islands of the centre of the archipelago. The eastern slopes receive rains from the north-east trade-winds, the maximum falling in the northern winter; the western slopes receive rains from the south-western monsoons which blow during the northern summer.

The mountains are covered with valuable forests; the sea-coasts produce coco-nut palms. The valleys, especially that of the Cagayan, famous for its tobacco, and that between the bays of Manila and Lingayen, are cultivated. Rice is the chief food crop, but it pays to import rice from Cochin-China. Tobacco, Manila hemp, coco-nut, and sugar are the most important articles grown for export. The islands now provide about one-fourth of the world's supply of copra. Much of the tobacco is rolled into cigars at Manila. Many minerals occur, but are not yet developed. A railway runs from Manilato, Antipolo, and Montalban, in the east of Luzon, to Aringay in the north, and to Cavite and other points in the south.

## PACIFIC ISLANDS.

The intertropical isles of the Pacific are either low coral atolls with coco-nut palms, or volcanic islands, which in many cases are girdled with coral-reefs. The temperature is constant and warm, the rainfall as a rule sufficient, and the volcanic islands especially fertile. Copra is the most important product in all the islands, but sugar is cultivated in Fiji, Samoa, and Hawaii, where bananas, rice, maize, coffee, cacao, and even tea are also grown.

It is hardly necessary to enumerate all the islands. The Tonga, Fiji, and many smaller islands are British. The most fertile of the Samoan islands are German. France owns Tahiti. Britain and France prevent each other from controlling the New Hebrides. The Hawaiian Islands, part of the United States of America, are the most important group, and with Guam and the excellent Samoan harbour of Tutuila give the chief strategic positions in the Pacific islands to that country. Honolulu in Hawaii, Apia in Samoa, and Suva in Fiji are the most important commercial and transport centres.

New Caledonia is an island of a very different type, lying between New Zealand and New Guinea. It has a mountainous axis, in which nickel, cobalt, copper, and chromate of iron are found, and on whose sides are thick forests. Coffee, maize, tobacco, sugar, and practically all tropical products can be cultivated. Minerals, especially nickel, cobalt and chrome ore, and tinned meats are the chief exports. The trade is chiefly with France. Nouméa is the chief port, and a railway is built from it to the interior.

## THE WEST INDIES.

The West Indies consist of the Great Antilles—the four large islands of Cuba, Jamaica, Hispaniola (divided into Haiti and Santo Domingo), and Porto Rico—the low coralline Bahamas lying north-west of Cuba and mainly north of the tropic, and the Lesser Antilles stretching north and south at their eastern extremity between  $10^{\circ}$  and  $20^{\circ}$  N. With the exception of Barbados, which is a low island of coral limestone, the Antilles are mountainous, most of the Lesser Antilles being volcanic.

**Climate.**—Considerable differences of temperature are found at different heights within a small area, but everywhere the daily and seasonal variations are small. The heat is tempered by a sea-breeze during the day, and by a hill-breeze during the night.

The trade-winds prevail at all seasons over the West Indies. February and March are the driest months. There are two rainy seasons, the rainfall being heaviest in May and October in the north, and a month or more later in the south, and in Trinidad there is one maximum in August. The eastern and northern sides exposed to the winds are the wettest.

**Products.**—The windward sides of the islands are wetter, cooler, and more densely wooded than the leeward sides. The forests produce mahogany, ebony, and other cabinet hardwoods, and valuable dye-woods. Wide stretches of savana are found in the upland regions. Sugar-cane is the principal crop in Barbados, Antigua, and St Kitts, and is important in almost all the islands. The cultivation of cacao and

of the banana, pine-apple, and other tropical fruits for the United States and British markets is being extended. Cuba is famous for tobacco. Cotton-growing is now an established industry on many of the islands. Sugar, rum, and cigars are the chief articles manufactured.

**Trinidad** is a square island with three peninsulas, two formed by the northern and one by the southern mountains. The rainfall is heavy from June till December. Cacao is now the most valuable and most widely cultivated product. The cultivation and manufacture of sugar is in the hands of a few large capitalists. The coco-palm thrives along the sandy shores of the south and east, and about 20,000,000 coco-nuts are annually exported. Tropical timber and dye-woods are also valuable products. Increasing attention is being given to the cultivation of oranges, bananas, and rubber. In the south and south-east of the island petroleum is obtained, and a large pitch-lake supplies asphalt, which is exported, in addition to cacao, sugar, coco-nuts and Angostura bitters. Coolie labour is employed, most of the overseers being British. Port of Spain, the capital and chief port, is connected by railway with Sangre Grande, San Fernando, and Princes Town.

**Barbados** has a climate similar to that of Trinidad. Sugar was formerly the only crop, and it still remains the most important; but recently the cultivation of Sea Island cotton has been established, and is extending. Small quantities of maize, arrowroot, and sweet potatoes are grown for local consumption. A few years ago the banana industry attained considerable importance, but owing to the lack of adequate cold-

storage facilities it has declined. The agriculture is carried on by negroes, who form the bulk of the dense population and own most of the land. There is a steady emigration of the surplus population from Bridgetown, the capital, from which a railway runs eastwards.

The **British Windward Islands** are Grenada, St Vincent, and St Lucia. Grenada grows cacao and some spices and cotton. In St Vincent the cultivation of sugar, which was formerly the principal product of the island, has suffered much in recent years through hurricane and eruption, and consequently the output is now small. The planting of Sea Island cotton was started in 1904, and now forms the leading industry in the island. Arrowroot is an important crop, and rum, molasses, cacao, and spices are also exported. Live-stock are raised. St Lucia exports sugar and cacao from Castries, one of the best harbours and one of the principal ports of call in the West Indies. .

Sugar is the most important product of the **British Leeward Islands**—i.e. those of the Lesser Antilles from Dominica northwards which are British. The cultivation of cotton is carried on in all the islands except Dominica. Dominica presents a marked physical contrast to Barbados. It is very mountainous and volcanic; but in spite of its fertility, only one-twentieth is cultivated. Lime juice and lime products and cacao are the principal exports; oranges, vanilla, and rubber, and most subtropical products, can be grown. There are few good roads. Roseau is the capital. Cotton, limes, and sugar are the chief products of Montserrat; sugar and cotton are the principal

crops in St Kitts and Nevis; and sugar is the leading export from Antigua, but cotton, pine-apples, and onions are also grown and exported.

Jamaica is an elliptical island which consists of the Blue Mountains in the east, separated by a valley from the limestone plateau of the west. It is hot in the lowlands and cool on the mountains. Rain falls in the summer months, and most abundantly in the east and north.

The limestone region is bare in many places. The alluvial lowlands are the most fertile part of the island. Cattle, sheep, horses, and mules are fed on the pasture-lands.

Bananas are by far the most valuable crop. Next come sugar and its products, which formerly held the leading place among the exports from the island, but have decreased in importance in recent years, and now form less than 13 per cent. of the total exports, while fruits (mainly bananas, oranges, and grape-fruit) provide over 55 per cent. of the export trade. Coffee is cultivated all over Jamaica, the most valuable being grown on the Blue Mountains. Cacao, allspice or pimento, logwood, coco-nuts, ginger, and other spices are also important exports.

Railways join Kingston, the capital, to Port Antonio and Montego on the north coast.

About half the imports come from, and three-fifths of the exports go to, the United States of America; the United Kingdom accounting for about half the former, but taking only a little more than a fifth of the latter. Jamaica owes its prosperity to the variety of the products cultivated. Reliance on sugar alone has long been given up. The breaking up of

large estates into small properties cultivated by their owners has added to the wealth of the island.

In the **Turks and Caicos Islands**, which, although geographically connected with the Bahamas, are dependencies of Jamaica, the production of salt from sea-water by solar evaporation is an important industry; the bulk of the produce is shipped to the United States.

The **French West Indies** consist of volcanic Martinique, where disastrous eruptions destroyed the northern half of the island and killed over 30,000 people in 1902; and the half-volcanic, half-limestone Guadeloupe, both densely peopled, and producing, in addition to sugar, pine-apples, bananas, cacao, coffee, tobacco, and cotton.

The **Dutch** own several small islands, of which Curaçao, famous for a liqueur made from the orange, is the most important. It lies off the South American coast.

**Saint Croix, or Santa Cruz**, the strategic key to the eastern part of the West Indies, St John, and St Thomas are Danish; the sugar-cane is the most important crop.

**Porto Rico**, formerly Spanish, now belonging to the United States, is very fertile, producing sugar, coffee, tobacco, fruits and nuts, and cotton, which, along with hides, form the leading exports. These are cultivated by peasant proprietors, the majority of whom are of Spanish descent. The change in political ownership was followed by tariff modifications, which have diverted the trade of Porto Rico to the United States.

**Santo Domingo**, the eastern half of Hispaniola, is peopled by Spanish mulattoes, who cultivate sugar, tobacco, cacao, coffee, and bananas. **Haiti**, the French-

speaking negro republic occupying the west of the island, produces timber, especially logwood, cacao, coffee, cotton, and sugar.

Cuba, the largest of the Antilles, lies just south of the Tropic of Cancer. The east is the wettest region. The slopes of the Sierra Maestra are covered with forests, in the clearings of which coffee is grown, but only enough to supply one-fourth of the local demand. Bananas, pine-apples, citrus fruits, and coco-nuts are grown in the lowlands, and cattle feed on the rich grass-lands. The central regions are very suitable for sugar-canes, and within recent years the sugar industry has made steady progress, the bulk of the output being shipped to the United States. Much of the tobacco, of which the famous Havana cigars are made, is grown on the southern slopes of the Organos Mountains, in the west; in recent years a series of bad tobacco crops has caused great distress, especially in the province of Pinar del Rio, and it is proposed to construct irrigation works in this district.

Cuba, along with all the sugar-growing islands in the West Indies, annually imports large quantities of jute-bags, mainly from Calcutta; but henequen is cultivated, and many fibrous plants grow wild in the country, and it is intended to undertake the manufacture of sugar-bags in order to meet the large local demand.

Cuba possesses valuable mineral resources—copper, iron, manganese, and asphalt being found in large quantities; at present only the iron is being worked to any considerable extent. In 1910 over a million tons of ore were exported to the United States, mainly from the Juragua and other mines in the Sierra

Maestra, in the province of Oriente. Small quantities of copper and asphalt are also exported.

There are over 2000 miles of railway in the country, the system running through the centre of the island, and passing through the sugar and tobacco regions, with branches to the chief ports.

Havana, the capital, and Matanzas on the north coast, and Cienfuegos on the south, are the chief ports in the western half of the island. Santiago is on a magnificent harbour in the south-east. Guantanamo is a United States naval station. The trade is mainly with the United States, which takes over 85 per cent. of the exports and contributes half the imports. The United Kingdom takes less than 6 per cent. of the total exports from Cuba, and sends over 12 per cent. of the imports, consisting chiefly of cotton goods, rice, and hardware.

### CENTRAL AMERICA.

Central America lies between the isthmuses of Panamá and Tehuantepec. A series of volcanoes runs parallel to the Pacific coast, and in the east several ranges extend from west to east. The peninsula of Yucatan is flat. The long rivers flow eastward to the Atlantic.

Three climatic regions can be distinguished—the lowest or hot region (*tierra caliente*), the middle or temperate region (*tierra templada*), and the highest or cold region (*tierra fria*). Most rain falls on the eastern slopes, where the normal zenithal rainy season is supplemented by rains during the north-east trades.

**Products.**—The hot regions of the eastern side are

covered with thick forest of valuable timber and dye-woods—such as mahogany and logwood—and rubber. The forests are much less dense and important on the drier western slopes, and give place to open savanas, on which cattle are fed.

The most valuable crops are coffee (especially in Guatemala, Nicaragua and Costa Rica), bananas (extensively cultivated along the Atlantic coastal belt in Panamá, in the valley of the Escondido River in Nicaragua, and in Honduras, where they furnish 40 per cent. of the export trade), sugar, tobacco, maize, cacao, coco-nuts, ivory nuts, and rice. The cultivation of cotton is being attempted in Salvador and Nicaragua. Balsam of Peru is cultivated along the coast of Salvador to the west of La Libertad, and indigo is also an important product. In Costa Rica bananas were originally planted in order to afford shelter to the coffee-trees, but they are now cultivated as an independent crop; over 10,000,000 bunches are annually shipped to the United States, and 1,000,000 to the United Kingdom.

The republics are rich in minerals, but no attempt has yet been made to develop the resources on an extensive scale. Gold is mined in Honduras, Nicaragua, Costa Rica, Guatemala, and Panamá; silver in Honduras, Nicaragua, and Guatemala. Iron, coal, and oil are also found in several of the countries, and the pearl-fisheries are important.

British Honduras exports mahogany and logwood, which, with bananas and rubber, are the staple exports from all the east-coast ports of Central America—Limon, in Costa Rica; Greytown, or San Juan del Norte, and Blewfields, in Nicaragua; Puerto Barrios,

in Guatemala; Belize, in British Honduras; and Colon, in Panamá.

Coffee, bananas, cacao, forest products, gold and silver, cattle, and hides are the chief exports from the western ports, which are the most important. The ports are Punta Arenas, in Costa Rica; Corinto, in Nicaragua; Amapala, on Fonseca Bay, in Honduras; La Libertad, the port of Salvador; San José and Champerico, in Guatemala; and Panamá, on Limon Bay.

The narrow isthmuses of this region permit easy communication between the Atlantic and the Pacific. Several interoceanic lines have already been built; in Guatemala from Puerto Barrios through the capital to San José de Guatemala on the Pacific; in Costa Rica from Limon to San José; and in Panamá from Colon to Panamá. In Nicaragua a railway passes from Corinto, the principal Pacific port, through Leon to Managua and to Granada, on Lake Nicaragua, from which the San Juan flows to the Atlantic. In Honduras, the line from Puerto Cortes to Pimienta is being extended to La Brea. A line connects Ocos, one of the Pacific ports in Guatemala, with Ayutla, on the Mexican frontier, and from Champerico a line passes through a coffee-growing district to the capital.

A canal, fifty miles in length, has been cut across the isthmus of Panamá from Colon to Limon Bay, the United States having acquired the territory extending for five miles on either side of the canal, although the towns of Colon and Panamá retain their own administration. By the construction of a huge dam at Gatun the valley of the River Chagres, which brings down great quantities of silt and boulders during the heavy

flooding of the rainy season, has been transformed into a great lake, 23 miles in length, and with an area of 164 square miles. Across the Cordilleras, which separate the Gatun Lake from the Pacific, the Culebra cut has been excavated for a distance of nine miles. At Colon and Panamá large coal depôts and oil-tanks are being established. To what extent the new canal will affect international commerce and alter the established trade-routes must depend, in a considerable degree, upon the tolls imposed upon shipping using the canal, upon the possibilities of obtaining cheap bunker fuel, and of obtaining a return cargo. The United States will naturally gain most by the opening of the canal, for not only will the distance from New York to San Francisco be reduced by over 8000 miles, but the voyage to Japan and China, with their rapidly expanding markets, will be much shortened. The United States will also be brought into direct communication with the Pacific coast of South America, and with the markets of Australia and New Zealand. Some effects of the canal are shown in the following table of distances:

To	From Liverpool.		From New York.	
	Present Route.	Via Panamá Canal.	Present Route.	Via Panamá Canal.
Vancouver .....	14,570	8,647	14,160	6,089
San Francisco. . . . .	13,770	7,847	13,360	5,289
Valparaiso .....	9,000	7,185	8,590	4,627
Wellington..... . .	11,981	11,058	11,570	8,500
Yokohama.. . . . .	11,678	11,372	13,566	9,714

## MEXICO.

**Configuration.**—Mexico extends from 15° to 32° N., but, although the northern portion is outside the tropics, it will be convenient to consider the whole

country here. It consists of a plateau, rising from north to south, where it is called the Anahuac Plateau, with an average elevation of 5000 to 7000 feet. This plateau is bordered east and west by mountain-ranges, the Eastern and Western Sierra Madre, at whose base a narrow coastal plain fringes the ocean. The southern parapet of the plateau is a region of lofty volcanic mountains, which tower above the Tehuantepec isthmus, beyond which the greater part of the limestone peninsula of Yucatan is still in Mexican territory. The republic also includes the peninsula of Lower California, traversed longitudinally by an irregular range of mountains.

**Climate and Vegetation.**—Except in the north, north-west, and centre, where it is very dry, the climate and vegetation of Mexico resemble the conditions of Central America, and the three zones, *tierra caliente*, *tierra templada*, and *tierra fria*, are all found, the last two in greater proportion than farther south. Lower California is semi-arid.

**Economic Productions.**—As a result of its latitude and elevation Mexico possesses a wide range of economic plants. In the low-lying hot lands and the lower slopes of the plateau, tropical and subtropical vegetation flourishes, including cacao, rice, coffee, bananas, sugar-cane, coco-nuts, cinchona, and vanilla. At greater altitudes temperate plants are cultivated, including wheat, maize (which is found at an elevation of over 7000 feet), and tobacco. On the limestone soils of Yucatan and throughout the drier regions of Mexico valuable fibre-yielding plants (henequen, or sisal-hemp, and ixile) are grown, from which ropes, cordage, and paper are made; from the maguey, or American aloe, in addition

to the fibre, a juice is extracted from which an intoxicating drink is fermented. On the grassy savanas and in the semi-arid region of the north live-stock are reared, especially goats and cattle. The forest products of Mexico are of great importance, the most valuable being rubber, fine woods, such as mahogany and cedar, logwood and other dye-woods.

Mexico is exceptionally rich in minerals, especially in silver (which is mined chiefly at Guanajuato, Zacatecas, and San Luis Potosi), gold (found mainly on the Pacific slopes and along the northern frontier), sulphur (obtained in the crater of Popocatepetl), marble, zinc, petroleum, mercury and precious stones, copper and iron.

Mining and agriculture are the principal industries. Iron-foundries and steel-works are in operation at Monterey, Aguascalientes, and Chihuahua; cotton-mills at Puebla, Camargo, and Durango; woollen-mills at Chihuahua, Durango, and Aguascalientes. Sugar-mills, distilleries, potteries, and tobacco-factories are widely distributed, but are usually on a small scale.

**Trade, Routes, and Towns.**—Minerals, tropical products, fibres, and animals are the chief exports; manufactured articles of all kinds, machinery, and coal are the chief imports. Trade is carried on chiefly with the United States; next with the United Kingdom, Germany, and France.

The chief ports are Vera Cruz and Tampico (where much of the silver is shipped) on the Gulf of Mexico, and Mazatlan (wheat), Manzanillo, and Acapulco on the Pacific. From Lapaz, on the Gulf of California, fruits are exported; a harbour is now established at Ensenada on the Pacific coast of Lower California.

From Mexico, the capital of the republic, railways run northwards to the United States frontier, on the eastern side of the country through San Luis Potosi and Monterey, in the centre through Leon and Chihuahua, and through Mazatlan and Guaymas on the western side. From the capital lines pass westwards through Colima to Manzanillo on the Pacific coast, southwards through Puebla to Oaxaca, eastwards to Vera Cruz, and south-east to join the railway which crosses the republic from Puerto Mexico (formerly Coatzacoalcas) on the Gulf coast to Salina Cruz and Tapachula on Tehuantepec Bay. The railway system is being completed along the coastal belt from Vera Cruz and Tampico to Matamoros.

## CHAPTER XV.

### EASTERN ASIA.

THE east coast of Asia, from the island of Hainan to the north of Yezo, lies between latitudes corresponding to those of Australia between the south of the Gulf of Carpentaria and the south of Tasmania. The physical and economic conditions, however, are very different. The eastern mountains do not form so continuous a barrier as in Australia, but stretch parallel to the coast south of 30°, and from Korea northward. A great plain extends from 30° to 40° N., with the mountains which form the Shantung peninsula rising above it in the east. In the south-west the land rises to lofty mountain-ranges and steep valleys, forming the eastern bulwarks of the Tibetan plateau, whose valleys lie two and a half miles above the sea. The

northern plains are bounded by steep escarpments, beyond which stretches the desert plateau of Mongolia, between 3000 and 4000 feet above sea-level. Off the east coast are the East China Sea with its shallow northern gulf, the Yellow Sea, and the Sea of Japan, with islands to the east of them. Formosa in the south, and the Japanese Islands in the north, are represented in the southern hemisphere by New Caledonia and New Zealand, both of which, however, lie much farther from the mainland. In addition to these differences in configuration, there are important differences in climate.

**Climate.**—The climate of Eastern Asia is one of great extremes, except in the very south. Even in the Japanese Islands the mean temperature varies from 75° to 40° F., and the mean range is from 20° in the south to 70° in the north. The summers are everywhere warm, with a temperature of over 80° in the south, and over 60° in the north. In winter, while the temperature does not fall below 60° on the southern coasts, it is as low as 0° in the north. Much lower winter temperatures, therefore, are experienced than in similar latitudes in the south of Australia.

The east of Asia, like the east of Australia, has its maximum rainfall during the summer months, except on the western coast of Japan, which receives heavy rains from winter storms blowing across the Sea of Japan. These winter rains affect all the southern Japanese Islands, and make the climate of Japan, which has a well-distributed rainfall, very different from that of China, where the rainfall is almost entirely confined to the summer six months.

The summer rains of Eastern Asia, like those of Australia, are due to winds which blow from the ocean to the continent; but whereas in the case of Australia these winds may be considered as the normal trade-winds intensified, in the case of Eastern Asia they are comparable with the monsoons of India. The cold, invigorating winter climate of Eastern Asia, however, is totally unlike that of India.

Destructive typhoons make the South and East China Seas dangerous to navigate in summer and autumn.

It will be convenient to consider the economic geography of this region under its main political divisions—the Chinese Dominions (with special reference to China Proper and Manchuria) and the Empire of Japan.

### THE CHINESE DOMINIONS.

**China Proper.**—Three great rivers cross China from west to east—the Si-kiang, in the south, flowing under the Tropic of Cancer; the Yangtse-kiang, in the centre, with a course which nearly coincides with the parallel of 30° N.; and the Hwang-ho, in the north, which flows in every direction except west between 35° and 40° N. The Yangtse rises in Tibet, and with its tributaries drains the centre of China, forming the most important route to the interior, as it is navigable for many hundreds of miles from its mouth. South of the Yangtse the country consists of mountain-ranges running from south-west to north-east, between which great tributaries of the Yangtse flow northward, the Yuen and

the Siang entering the Tungting Lake, and the Kan entering the Poyang. In the summer months, when the main river is in flood, these lakes act as regulators by receiving a portion of the surplus waters, and thus preventing them from inundating the lower parts of the Yangtse basin, which is relatively flat from a little above the Tungting Lake to the mouth of the estuary. The Han is an important tributary from the north-east.

The Hwango-ho also rises in Tibet. Unfortunately it has no regulating lakes to act as reservoirs, and consequently the river, which flows over 400 miles across the plains before reaching the sea, often floods vast areas, doing havoc both to life and property. It has earned the double name of 'China's blessing' and 'China's sorrow,' for it is invaluable as a means of irrigating and rendering fertile the northern plains, while its frequent changes of course not merely cause disastrous floods at the time, but also ruin the farms round its deserted course by depriving them of irrigation. The Hwang-ho is shallow and rapid; it flows through deep gorges, and, unlike the Yangtse, is of little use for navigation. The valley of its tributary the Wei-ho, which rises in Tibet and flows due east, is, however, an important route to the west.

Economically, China Proper falls into three divisions: (1) the Si-kiang basin; (2) the Yangtse basin; (3) the northern plains, including the basin of the Hwang-ho, or Yellow River.

**The Si-kiang Basin.**—The basin of the Si-kiang, or West River, lies south of the Nanling Mountains, and corresponds in latitude with the Fitzroy River

in Queensland or the Limpopo in South Africa. Tropical vegetation flourishes, but in diminished size, including bananas and other palms, the coconut, and many valuable timber-trees in the mountain forests. In the valleys rice and sugar are cultivated. Silk is produced in large quantities. Tea is cultivated in the north, and tobacco and the poppy in the west.

The **Yangtse Basin** corresponds in latitude with the south of Queensland and the north of New South Wales. The climate, however, is more extreme, with very cold, invigorating winters and hot, moist summers, becoming cooler in the west, where the land rises towards the lofty plateau of Tibet. Tea and silk are the most important products of the mountains between the West River and the Yangtse. Rice and sugar are cultivated in the valleys of the Yangtse between the Poyang Lake and the east coast. Opium is grown in all the provinces, more particularly in the west. Camphor, wax, and lac are among the products of the forests.

The **Northern Plains** have a still more extreme climate. In the north of the eastern plains the rivers are frozen in winter, though they correspond in latitude to south Italy, or to south Victoria and north Tasmania. A loose, fertile, yellow soil called loess, blown from the desert, covers much of the plains, and even the hollows of the mountains, which can consequently be cultivated to a very great height. Temperate cereals and grains of all kinds are grown; while the hot, moist summers permit tropical and subtropical produce, such as sugar, indigo, rice, cotton, tobacco, and opium, to be

raised on the same fields, at least south of the Gulf of Chihli (Pe-chi-li).

**Minerals.**—Coal and iron, the most important minerals in modern industry, are very plentiful and widely distributed. Coal is abundant in the mountains immediately west of the great plains north of the Hwang-ho, where the best anthracite and bituminous coal occur in great seams, which in the province of Shansi can be quarried. The whole of south-eastern Hunan—that is, the valley of the Siang—may not unfitly be called one great coalfield. Besides these two vast coalfields, in united area greater than the whole of Ireland, coal is found in many of the western mountains, especially in Szechwan. It also occurs in the higher land both north and south of the Gulf of Chihli. The chief sources of supply at present are the Kaiping mines, near Tientsin, which furnished about 30 per cent. of the total output of three and two-third million tons in 1910; the Fushun mines in Manchuria; the Pinghsiang mines in Kiangsi; and others in Hunan, Shantung, and Chihli. Iron is abundant in the Shansi and the western coalfields, and in Manchuria. The leading centre at present is in the Yangtse valley below Hankou. Tin is the most important mineral export, the most valuable deposits being found near Mengtse, in Yunnan. Copper occurs in Yunnan. Kwei-chau, and near Kiu-Kiang, on the Yangtse-kiang. Antimony is obtained near Changsa, in Hunan. Silver, zinc, and lead are also found and exported.

**Manufactures.**—China has long been famous for exceedingly fine porcelain, bronze, and textiles. Domestic manufactures of many kinds are carried on. In recent years factories of European type

have been started, mainly in and around Shanghai and Canton, to manufacture textiles, especially cotton and silk, and munitions of war. Sugar-refineries, paper-mills, and tobacco-factories have also been established on a large scale. In the future China will probably take rank as one of the chief manufacturing countries of the world; and with its command of coal, iron, and cheap labour, its varied products, and its proximity to the sources of many important raw materials, such as wool, cotton, jute, &c., it may prove a serious rival to Europe and America in spite of the disadvantage of the winter air being dry.

**Means of Communication.**—Water is the most important means of communication. The Si-kiang is navigable for large vessels as far as Wuchou, beyond which smaller boats continue the navigation almost to the frontier. A canal connects the Si-kiang with the Yangtse-kiang by joining the Kwei, a tributary of the former, to the Siang, a tributary of the latter. A great part of the trade of western and central China passes through the basin of the Yangtse. The main stream is navigable for ocean steamers as far as Ichang, over 900 miles from its mouth. The favourable period for navigation above Ichang is when the river is low in winter; while below this point flood-time, when the shoals are well covered, is best. Above Ichang are great gorges where navigation is impeded. Smaller steamers can, however, ascend as far as Chungking, the most important river-port in Szechwan, at the mouth of the Kialing. The Kialing and the Min drain this fertile province, comparable with England in its area, population, and the well-being of its people.

The canal system of China is highly developed. Many centuries ago the Grand Canal was constructed across the great plains between Hangchou, on a gulf of the same name, and Peking, the northern capital. This canal unites the lower Yangtse and Hwang Rivers, and although much of it has fallen into bad repair, the section south of the Hwang-ho is still navigable, at least for small boats. The Hwang-ho is of little use for navigation, but the Pei-ho and its tributaries form an important means of communication across the northern portion of the plains, and join Peking to its port of Tientsin.

Railways are as yet of little importance. From Kharbin, on the Trans-Siberian Railway, a line runs south through Mukden, now a growing railway centre, to Port Arthur; one branch crosses the Yalu River to Fusan, in the extreme south-east of Korea; another goes to Taku, from which port a line runs inland through Tientsin and Peking to Kalgan. From the capital a line has been completed as far as Hankou, on the Yangtse-kiang, and is being continued south to Canton. A railway from the coast at Tsingtao, on Kiauchou Harbour, through Shantung, joins the Peking-Hankou line at Ching-ting-fu, from which point a line proceeds westward to Tai-yuan, in Shansi. A line has been opened from Nanking to Shanghai, and is under construction to Ningpo. The Tientsin-Pukou railway, which crosses the Yellow River by a bridge over three-quarters of a mile in length, forms an important north to south route through a fertile country with a very dense population. In southern China a railway runs up the valley of the Red River from Haiphong, on the coast of Tongking, across the

tin and copper fields of Yunnan to Yunnan-fu. Canton is connected by railway with Kowloon. An important line is projected from Hankou to Sechwan.

**Trade.**—A considerable trade is carried on overland through Tali-fu with Siam and Burma, through Chengtu on the Min with Tibet, through Langechou with central Asia, and through Peking with Mongolia and southern Siberia.

Many ports are open to foreign vessels, the most important being Shanghai, the outlet for such of the produce of the Yangtse valley as is not shipped direct from Ichang, Hankou, Chinkiang, or other river-ports.

The silk and teas of the fertile south-eastern provinces are sent to several ports, such as Fuchou, Amoy, and Swatou. The produce of the Si-kiang basin is brought to Canton, on its delta, off which rises the British island of Hong-kong, where a very large entrepôt trade is carried on. Kiauchou and Chifu are the chief ports of Shantung. Tientsin is the outlet for the northern part of the plains.

China is mainly self-supplied, but is every year obtaining more of its manufactured goods from abroad. The chief imports are cotton goods, opium, rice, sugar, hardware, and petroleum. To foreign markets China exports silk, tea, raw cotton, soya beans, oil cake and seeds, straw, hides and furs, and paper. China is so vast a country, with such diverse climatic and economic conditions, that it may well remain self-supporting. It possesses an abundant supply of labour, and its traders are well known for their mercantile ability and commercial probity. As the means of communication are extended, the mineral

resources developed, and modern methods introduced into the industries of the country, the Republic may become a serious economic rival to the leading nations of the world.

**Manchuria** is a great undulating lowland, lying between the Khingan Mountains and the mountains which form the northern border of Korea. It is drained in the north by the Sungari and its tributaries, and in the south by the Liao. The extremes of temperature are very great. The winter is cold, and the soil is frozen for four months. At the end of March ploughing begins. Wheat and barley are sown, and are harvested before midsummer, and a crop of millet or beans is planted in time for the summer rains.

'Millet is the chief food of the people, but much wheat is grown in the north; barley is cultivated for distilling; maize, root-crops, vegetables, opium, tobacco, and many fruits are raised. Beans are used not merely for food but for the oil, expressed under great granite wheels. The mountains, especially in the south and east, are covered with forests, which consist of deciduous trees at low levels, and of conifers at greater altitudes. Many trees are felled, and the logs are floated down the rivers, especially the Sungari, to the plain.

'The Chinese of Manchuria are farmers in summer and carters in winter, when transport by cart or sledge is easy over the frozen soil. Conveyance by cart is necessary, as in this hilly land the rivers are rapid, and not very navigable, although both the Sungari and Nonni might be much more used than they are.

'Chinese immigration is constant, and has resulted in the agricultural development of the two southern provinces, while most of the northern ones still remain to be broken by the plough. As a whole the people are prosperous peasants, living on their own property. Want is felt only in times of famine or flood. The taxes are said to be the lightest in the world.'\*

Kharbin is a growing railway and industrial centre, containing large flour-mills, distilleries and breweries, soap and candle factories, oil-mills, and glass-works. Dairen is the centre of the soya-bean industry. Extensive deposits of coal and iron are found in the country, and ironworks are in operation near Liaoyang and at Pengchihu, from which the output of pig-iron is mainly shipped to Japan. Niuchwang, near the mouth of the Liau River, is the chief port, through which beans, cereals, maize, oil, Tussah silk, tobacco, and hemp are exported. The leading imports are textiles, hardware, oil, and machinery.

### JAPANESE EMPIRE.

The Japanese Empire extends from the south of Formosa, south of the tropic, to the north of the Kurile Islands, 50° N., and includes the southern half of Sakhalin.

**Formosa.**—Formosa is mountainous, and receives heavy rains from the trade-winds on its eastern slopes, which are densely forested with camphor and other useful trees. On the western plains rice, sugar, and tea are cultivated.

The chain of the Luchu (Riukiu) Islands, which

\* Article in *School World*, Jan. 1901, p. 21, by A. J. Herbertson.

produce sugar and rice, connect Formosa with Japan Proper.

The Japanese Islands consist of four large and many small islands, lying between 30° and 45° N.—that is, almost in the latitudes of New Zealand. The mountainous northern island of Yezo, or Hokkaido, corresponds in latitude with the Middle Island of New Zealand, but is smaller and has a colder winter. It is thickly forested.

The wealth of Japan is concentrated in the southern islands, Honshiu (Hondo), Shikoku, and Kiushiu. All are very mountainous, with loose volcanic soil, which is easily carried away by the rivers when in flood. The climate is extreme, especially in the north of Honshiu. Most rain falls in summer, except on the western slopes, where snow falls heavily in winter, borne by the north-west winds across the Sea of Japan. The north of Japan is covered with woods, in which camphor, lacquer, wax, paper, and mulberry are the most important trees. Two-fifths of the land is under cultivation, more than half the cultivated area producing rice. Barley, millet, pulses, and other foods are grown, and in central Japan are great tea-plantations.

‘Agriculture is the chief occupation of the Japanese, and they are very careful farmers, thoroughly understanding cropping and the rotation of crops. The soil is not naturally very fertile, being mostly volcanic or derived from igneous rocks, but it is made productive by careful manuring, especially with night-soil from the villages and towns. Rice is the staple production; while barley, millet, wheat, buckwheat, maize, and many varieties of beans and peas are also

everywhere produced. The rice harvest commences in September; wheat is sown in drills in November and December, and is reaped in May and June.\*

Sugar and tobacco are also grown, and silkworms are reared; the cultivation of cotton and indigo is decreasing. The fisheries of Japan are an important source of wealth, the chief fish caught being bonito, sardines, pagurus, herring, and cuttle-fish.

**Minerals.**—Copper (the most productive localities being Akita, Tochigi, and Ehime), gold (found in Kagoshima, Hyogo, and Niigata), iron (the chief deposits of which are at Kamaishi), silver, antimony (obtained in Shikoku), and lead (found in Tsushima island) are the chief metals. Coal, however, is the most valuable mineral, its production having increased from three and three-quarter million tons in 1891 to fifteen and a half million tons in 1910. The most extensive coalfields are in Kiushiu, the mines at Chikuzen and Buzen, in the north of the island, furnishing more than half the total output from Japan. The Miike mines, on the eastern shore of Shimbara Gulf, and the Takashima coalfields, near Nagasaki, are also of increasing importance. In connection with the former a coaling-station has been established at the mouth of the Suwa River. In Yezo the largest deposits are found near Poronai. Sulphur, which is principally obtained in Hokkaido, is now a considerable item in the export trade of the country, the production having increased 55 per cent. during the five years ending 1910. The output of petroleum, chiefly from Echigo, has risen from nine million gallons in 1897 to sixty-two million gallons in 1910.

\* *Chambers's Encyclopædia*, vol. vi. p. 283.

**Manufactures.**—Japan has long been famous for its manufactures, among which are exquisite tissues, porcelain (especially near Nagoya), bronzes, hardware, and wooden and lacquer ware (at Kyoto and Tokyo). Japan opened its doors to foreign influence a generation earlier than China. Its manufactures on modern lines have made great progress since the opening of the century, an important factor in this development being the abundant supply of cheap labour, especially of female and child labour. The cotton industry has undergone remarkable developments, and the output from Japanese mills was more than doubled between 1897 and 1910. Ninety per cent. of the manufactured cotton is exported to China. The manufacture of silk (mainly in the prefectures of Nagano and Gumma) and of wool, sugar-refining (which is now becoming a staple industry), paper-making (chiefly carried on near the sources of supply in the provinces of Suruga and Totomi, and more recently in the Sapporo district of Hokkaido), the chemical industry, the manufacture of matches (which are rapidly displacing Swedish matches in the markets of eastern Asia), of soap (at Amagasaka), of steel and machinery (at Wakamatsu, Kure, Osaka, and Muroran), and of ships (at Nagasaki), are all being steadily developed along the most up-to-date lines.

**Trade.**—Japan has a large foreign trade. Silk and silk manufactures are the most valuable items of export, forming 36 per cent. of the outgoing trade. The largest proportion of the raw material goes to the United States, which also takes about 90 per cent. of the tea exported from Japan. Cotton yarn and manufactures, copper, coal, and matches are also among the

leading exports. By far the most important import is raw cotton, followed by soya beans and oilcake, petroleum, cotton goods, rice and other foodstuffs. The largest trade is carried on with the United States, China, and Great Britain. 'The principal exports to Great Britain from Japan are rice, copper, silk tissues (*habutæ*), silk handkerchiefs, raw silk, porcelain, earthenware and lacquer-ware, carpets, straw mats, and camphor. An enormous rise in the quantity of copper sent is to be seen from the returns.\* The copper exports in 1898 were valued at £700,000; in 1911 they had increased to £2,000,000.

**Means of Communication.**—Few parts of Japan are more than sixty miles distant from the sea, and the coasting trade is very important. A railway runs from Kagoshima, in the south of Kiushiu, with branches to Nagasaki and Sasebo, through a coal-mining region to the growing port of Moji, opposite the port of Akamagaseki, on Honshiu; from this point a railway runs along the south and east coasts to Aomori, in the extreme north of Honshiu, and connects the important ports of Kobe, Osaka, and Yokohama, and the ancient and modern capitals, Kyoto and Tokyo. In Hokkaido the chief ports are Hakodate, an important fishing-station, Otaru, and Muroran. From Hakodate a railway runs through Sapporo and the Poronai coal-field to the capital of the island.

**Korea.**—Korea was annexed to the empire of Japan by treaty in 1910. It is a mountainous peninsula, with a steep slope to the east, and a gentler slope westward to the Yellow Sea, in which lie innumerable islands. The eastern slopes, which receive much more

\* *Board of Trade Journal*, vol. xxix. p. 209.

rain than the western, are covered with dense forests. There are fine pasture-lands in the west. The southern plains grow rice, wheat, beans, tobacco, and cotton; while those of the north produce cereals and root-crops of temperate lands, such as barley, oats, and potatoes. Ginseng, which is grown in the neighbourhood of Kai-song, is one of the most valuable products of Korea, and is in great demand for export to China, which also takes rice and beans. Gold is found and mined, chiefly at Gensan. Over £900,000 worth was exported in 1910. Coal, iron, and copper are known to exist, but their development is only beginning. Extensive salt-fields, for manufacture by spontaneous evaporation, have been established at Koang-Yong Bay. Textiles, timber, coal, oil, sugar, and machinery are the principal imports; while rice, beans, hides, and cattle are the leading exports. A railway runs throughout the length of the country from Wiju, at the mouth of the Yalu River, in the north-west, through Seoul, to Fusan, in the extreme south-east. From Seoul a line runs north-east to Gensan, while a branch leaves the main line at Tai-fun and runs along the south-west coast to Mok-po. The traffic carried by the railways amounted to 390,000 tons in 1907-8, and to over a million tons in 1911-12. The chief ports are Chemulpo in the west, Fusan in the south, opposite Japan, Gensan in Broughton Bay in the east. The country, however, is still little opened up, but the means of communication are being steadily improved, and its great resources developed.

## CHAPTER XVI.

## THE RUSSIAN EMPIRE.

THE vast Russian Empire, nearly 9,000,000 square miles, or more than seventy times the British Isles, in area, stretches from 35° N. to beyond the polar circle, and from the Baltic to the Pacific. It lies farther north than any of the lands yet considered, with the exception of Canada. The Crimea and Transcaucasia correspond approximately with the Lake peninsula of Canada, the great plains of Siberia with those of central Canada, and the Amur highlands with those of British Columbia. The Transcaspien, or Turkestan, provinces have no analogue in Canada.

*Asiatic Russia.*

**Amuria and Siberia.**—Amuria consists of the forested Trans-Baikál plateau and the eastern mountain region drained to the Pacific. Its climate is one of great extremes. The rainfall is heavy near the coast, but small in the interior.

Siberia extends west to the Urals as a vast low-land, drained to the Arctic Ocean. It is crossed by the great rivers Lena, Yenisei, Ob, and their tributaries. All are navigable for many hundreds of miles in summer, but are ice-bound in winter. The two last-named have vast estuaries opening into the Arctic Ocean, which can be reached by vessels from Europe in favourable summers, and which might perhaps be kept open every summer by means of

ice-breakers. The climate of Siberia is drier and even more extreme than that of Amuria. In the north the surface consists of tundra, where the frozen soil produces only dwarf vegetation, in which lichens predominate. This zone is succeeded to the south by a forest zone, giving place in its turn to grassy steppes gradually passing into desert.

Both Amuria and the mountains of southern Siberia are rich in minerals. Gold is obtained in large quantities in eastern Siberia by gravel-washing, and in the west by quartz-mining. The most productive gold-bearing regions are the Olekminsk district, in the Lena basin, the Amur district, the Trans-Baikal plateau, and the eastern mountains of Amuria. Iron ores occur in the vicinity of Irkutsk, the Selenginsk region, and in the Altai; while the chief ironworks of the Ural district are on the eastern side of the mountains. The construction of the railway created a demand for fuel, and has led to the development of the coal resources of Asiatic Russia. In western Siberia the Sudzhensky and Tcheremhovsky coal basins are at present the most productive; but extensive deposits are known to exist in the Irtysh valley, near Kuznetsk, at the base of the rich mineral region of the Altai, and in the Minousinsk region, lying to the east of the Altai, but the transport facilities must be extended before the exploitation of these fields becomes possible. In eastern Siberia the principal coal-producing region is in the Primorsk district, but valuable coal-seams have also been found near Nerchensk, in the Amur valley, through which a railway is being built; and at various points in the Maritime Province and in Sakhalin. Silver, lead ores, and copper occur in the

**Altai and Nerchensk Mountains.** Copper is being worked at Atbasar and Yuspenssky, on the Kirghiz Steppes, where local coal is used for smelting the ore. The Siberian slopes of the Urals are among the chief platinum-producing regions of the world.

The economic development of Siberia is only beginning. Half a century ago it was little more than a penal settlement, but since the opening of the Great Siberian line its colonisation by Russian immigrants is proceeding rapidly. The steppes are fast being covered with immense crops of wheat, in the same manner as the opening of the Canadian Pacific line led to a rapid extension of wheat-growing in the corresponding plains of Canada. The similarity of Siberian and Canadian agricultural conditions accounts for the increasing imports to Russia of American agricultural machinery. In addition to the cultivation of cereals, increasing attention is being paid to flax-growing and dairy-farming.

The fisheries are a factor of some importance in the development of Asiatic Russia. The fishing industry is being developed on the Ob and the Yenisei, and on Lake Baikal, but the principal centre lies in eastern Siberia. On the Amur and the coastal waters and rivers of Kamchatka there are extensive salmon-fisheries; much of the produce is either dry-salted for the Japanese market, or frozen or canned for the Russian, English, or colonial markets. Large quantities of herring, cod, and sturgeon are also obtained in the waters and rivers of the Far East. The herring catch is mainly utilised for the manufacture of *tuk*, or fish-manure, which is in great demand for the rice plantations of Japan.

The Great Siberian line is the longest direct line in the world. Its present Pacific termini are Port Arthur and the commercial port of Dalnyi, both on the Liautung peninsula, and Vladivostok, on the 'Golden Horn of the East,' from which point the journey to Moscow, a distance of 5500 miles, is accomplished in nine days. In addition to the line through Manchuria (see page 178), another runs from Vladivostok to Khabarovsk, on the Amur, where passengers and freight are transferred to steamers and carried up the river past Blagovestchensk, the chief and rapidly developing commercial centre, to Stretensk; but a railway is now being built along the Amur valley, and has already been completed as far as Blagovestchensk. From Stretensk the railway runs due west to Kaidalovo, near Nerchensk, to join the main line from Manchuria. The line, still running west, curves round the south of Lake Baikal to Irkutsk, the most important town of central Siberia; and nearly coinciding with the parallel of  $45^{\circ}$ , passes through the growing towns of Krasnoyarsk on the Yenisei, and Omsk on the Irtysh, to Chelyabinsk in the southern Urals, where it divides, one branch passing west through Samara to Moscow and St Petersburg, the other north through Perm to Kotlas on the Northern Dvina, which in summer is navigable to Archangel, to which the line will ultimately be extended. Among other important proposals for the extension of the means of communication, in addition to the Amur railway, now building, are a line from Peking, via Kiakhta, to join the Siberian system; a direct route from St Petersburg to Kurgan, through Perm and Ekaterinburg;

and a south Siberian State line, joining Uralsk and Pavlodar, and crossing the Kirghiz Steppes and the Altai to the Great Siberian Railway. It has also been proposed to construct a water route to unite the waterways of Asiatic Russia with the Volga, and thus reduce the cost of transport of Siberian produce.

'Among export freights from Siberia, the first place is taken by corn (42 per cent.), which is sent principally to the European market through the ports of Reval, Libau, St Petersburg, and Riga. Next come cattle and dairy produce.\* Western Siberia is the principal centre in the empire for the production of butter, which is practically the only output from the Siberian farms. During the first decade of the century the butter freights on the Siberian Railway increased by 83 per cent., and they now exceed 70,000 tons per annum. Much of the butter is shipped to the London market through the Baltic ports, to which it is conveyed in special refrigerating cars. The value of the total exports of butter from the empire increased from two and a half million pounds in 1901 to over seven millions in 1911. Furs, tallow, hides, feathers, fish, and game are also considerable exports from Siberia. Of goods in transit, tea is the most important, principally from China. The leading imports by the Siberian Railway are hardware, machinery, and agricultural implements, sugar, textiles, and petroleum.

**Russian Central Asia.**—Russian Central Asia is a desert fertilised by rivers which have their source in the melting snows of the surrounding mountains, bordered on the north by the zone of the Steppes. The Syr Daria and its tributaries create the fertile

\* *Board of Trade Journal*, vol. xxix. p. 546.

regions of Ferghana and Tashkent; the Zerafshan, the oases of Samarkand and Bokhara; the Amu Daria, the oasis of Khiva; and the Murghab, the oasis of Merv. The winters are long and very cold, but the summers are so warm that cotton is the most important crop under cultivation, covering over 600,000 acres in Ferghana alone; with the extension of irrigation the area under cotton could be very considerably increased; the raw material is sent to the mills of European Russia, where it supplies about 50 per cent. of the total consumption. Rice, maize, and sorghum are summer, and wheat and barley are winter, crops on the oases; gardening is a growing industry south of Syr Daria, and large quantities of vegetables and every kind of Mediterranean fruit are grown; the silkworm is reared, especially in Bokhara and Ferghana. On the steppelands are many flocks and herds, which yield hides and wool. The minerals are numerous, but are as yet scarcely utilised. The fisheries of the Aral basin have undergone a remarkable development with the extension of transport facilities. The most valuable are found in the Syr Daria region. The fishing is almost entirely carried on during the winter, and the catch is delivered in a frozen condition, the principal kinds being silurus, bream, carp, and pike. A railway connects Tashkent, Andijan, and Kokan, by Samarkand and Bokhara, with Krasnovodsk on the Caspian, tapping the trade of north-east Persia at Ashabad. A line from Tashkent crosses the Steppes to Orenburg, where it joins the Russian railway system.

**Transcaucasia.**—Transcaucasia lies south of the

Caucasus, and extends east to Ararat and the middle Aras. Its climate is less severe than that of Central Asia, the Caucasus acting as a barrier to the cold north winds. The rainfall is very low east of Tiflis, the capital and chief town, but is heavy in the western Caucasus. The mountains are forested. Cultivation is carried on in the valleys. Tea has been planted on the slopes of the Caucasus, but the scarcity of labour militates against its success. Every kind of Mediterranean fruit, including the vine, can be cultivated. Cotton cultivation is extending, more particularly in the south.

Russia occupies the second place among the petroleum-producing countries of the world, and furnishes about a fifth of the total output. The richest petroleum region is situated on the Apsheron Peninsula, on the western side of the Caspian Sea, Baku being the principal seat of the industry. From the wells at Baku nearly ten million tons of oil were obtained in 1904, but since that date the output has declined, and is now less than seven million tons per annum. The oil is either sent across the Caspian by steamers, which make use of it as a fuel, to Astrakhan, the principal distributing centre of Russian oil shipments, or it is conveyed by huge pipe lines, a distance of five hundred miles, to the Black Sea ports at Batum and Poti. Large petroleum deposits are also found in the Grozny district, on the northern side of the Caucasus; the output is carried by rail to Petrovsk, on the Caspian, where it is shipped to Astrakhan. Extensive oilfields are being developed in the Emba valley, in the north-east of the Caspian. From the wells on the island of Cheleken, in the Caspian, an annual

output of 240,000 tons is being obtained. The Maikop oilfields, situated in the valley of the Bielaia River, which drains northwards from the Caucasus to the Kuban, have now an annual production of 160,000 tons, the bulk of which is exported.

### European Russia.

**Configuration.**—European Russia is a vast undulating plain, extending 1700 miles from north to south, and 900 miles from east to west. Across this plain flow some of the longest rivers of Europe—the Volga to the Caspian, the Don to the Sea of Azov, the Dnieper (with falls near its mouth) to the Black Sea, the Western Dvina to the Baltic, and the Northern Dvina to the White Sea.

**Climate.**—There is great diversity of climate, varying from Arctic conditions in the north, where the winter lasts for many months and the rivers are ice-bound, to a Mediterranean climate in the southern Crimea. Russia may be profitably compared with Canada, from Lake Erie to the Mackenzie delta.

**Vegetation Zones and Productions.**—The tundra of the Arctic coast is succeeded to the south by coniferous forests, which stretch from the Gulf of Finland to the south of the Urals. South of the conifers come forests of mixed woods, extending from the north of the Karpathians to the confluence of the Kama and the Volga. Still farther south are grassy steppes, passing into desert salt steppes towards the south-east. The southern boundary of the forests agrees with that of morainic soils, while the steppe-lands are covered with loess, which, when mixed with humus, forms a rich black earth.

One-fifth of the surface of European Russia is unproductive; nearly two-fifths are forested; the remaining two-fifths consist of meadow and arable land. More than one-fourth of the whole surface is under cultivation.

Within recent years there has been a remarkable development of Russian agriculture (upon which three-fourths of the inhabitants are directly dependent), due principally to the adoption of improved methods of cultivation and the application of modern machinery, as well as the exploitation of the fertile lands of Asiatic Russia. Thus the area under wheat, which in the period 1896-1900 averaged fifty million acres, showed an increase of 33 per cent. in the period 1906-10. The extreme north and the extreme south-east of European Russia are pastoral. The reindeer is kept on the tundra; sheep, cattle, horses, pigs, and goats on the steppes. Dairy-farming is a very important industry in the northern provinces, as well as in the Vistula and north-western provinces. In the clearings of the coniferous forests the principal cereal is oats, with the addition of wheat in the Kama basin. Hemp is grown in the centre of this zone. Flax is extensively cultivated in the central and northern provinces, Russian flax occupying a similar position on the markets of the world to that held by American cotton. In the south-west, near the Karpathians, and between the Oka and the Dnieper, large crops of sugar-beet are raised. In the south, especially in the provinces of Voronezh and Tambov, there is a large poultry-rearing industry. Except in the south-east, the steppes are composed of fertile black earth (*chernoziom*), and

form the great wheat-growing region of European Russia. Flax is also cultivated in the *chernoziom*, as well as along the lower Don and in Bessarabia. The vine flourishes in the Crimea and along the Kuban. The cultivation of fruit, especially plums, apples, pears, cherries, apricots, and even peaches, is an important industry in the Crimean valleys, in Bessarabia, and the Volga region. Rye is grown everywhere for food, except in the salt steppes of the south-east, where the rainfall is too scanty.

The extensive system of rivers, lakes, and inland seas in Russia furnishes valuable quantities of fish of various kinds. The fisheries of the Caspian basin are the most important; sturgeon is obtained in the Kura River and in the Volga delta, but the herring-fishing is the most valuable; in addition to supplying the local markets, especially of southern Russia, where herrings form the staple animal food of the people during the summer months, large quantities are exported, either in a fresh condition, or after being salted and canned. Astrakhan is an important refrigerating centre. Roach, perch, pike, and dace are obtained in the lakes of north-west Russia, while valuable salmon-fisheries are found in the rivers entering the White Sea, and cod, haddocks, and flat-fish along the Murman coast.

Russia is well supplied with **minerals**. The Urals are exceedingly rich in both precious and useful metals, including platinum (of which the empire supplies over 90 per cent. of the world's total production), gold, silver, copper, iron, and coal. The most important coalfields are those of the Urals, the Oka (of which Tula is the centre), the Donets, and Poland.

On all these iron is plentiful. Lead and zinc are found in Poland. Salt is obtained from the salt lakes and seas, and in the centre and north from rock-salt. In addition to its extensive forest resources, Finland possesses vast stores of water-power which are being utilised for the production of electricity.

In manufactures, the domestic industries are still the most important, almost every article, from the coarsest to the finest, being produced, generally under some system of co-operation. In recent years, however, there has been a great extension of the factory system, more particularly in the Moscow district (where female labour plays an important part), in south Russia, and in Poland round the coalfields, and at St Petersburg. Many of these factories are financed by foreign capital—German in Poland; British, Belgian, and French in south Russia. In addition to the cotton industry, which is generally carried on with British machinery and frequently under the supervision of Lancashire men, wool and hemp are the chief textiles manufactured. The cotton industry is the most highly developed, and has made great progress since the beginning of the century. Since 1900 the weaving-mills have increased by 51 per cent., the looms by 70 per cent., while the consumption of raw material has increased from 256,000 tons in 1900 to 352,000 tons in 1910, or by 37 per cent. The principal manufacturing centres are in the provinces of Moscow and Vladimir and in the neighbourhood of Lodz. Russian cottons find a market in Persia and the Far East. The chief centres of the Russian woollen industry are in the Baltic and Polish provinces and in the Moscow district, where thin fabrics are produced ;

and in the provinces of Tambov and Simbirsk, where Russian wool is made into heavy, coarse cloths. Iron, engineering, and electrical works are increasing in number, especially in the southern provinces, where local coal and iron are used; extensive foreign contracts are being obtained, particularly in the Donets basin, for iron and steel goods. As a result of the great agricultural development throughout the empire, the manufacture of agricultural machinery and implements is a rapidly growing industry. The manufacture of hardware is of great importance in Poland; while the rubber industry, especially the manufacture of vehicle tyres, goloshes, and vulcanite goods, is of great consequence in Riga. Spirits, sugar, soap, candles, paper, earthenware, tobacco, and many other manufactures are increasing rapidly.

**Trade, Towns, and Routes.**—With the industrial development of Russia, the population, which already exceeds 135,000,000 in Europe alone, is increasing very fast, more particularly in Poland and in the south, where the towns are growing very quickly.

In the matter of internal communication, Russia is magnificently supplied with lakes and navigable rivers, the only drawback being that they are frozen during the winter months. The Volga, the longest and most important river of European Russia, is connected by canal with the great lakes in the north-west; along its lower course the river is navigable for barges up to 8000 tons. The traffic annually carried by the Volga and its tributaries amounts to sixteen million tons.

St Petersburg, the capital, on the canalised Neva, is an important manufacturing and commercial centre,

its trade being largely in German hands. Moscow, in the heart of the country, the physical, ecclesiastical, political, and commercial centre of the empire, stands at the head of navigation on the Moskva, which flows into the Oka, a tributary of the Volga. From Moscow railways radiate in all directions, connecting it with Vienna, Berlin, and St Petersburg, and the ports of Archangel on the White Sea, Port Arthur and Dalnyi on the Pacific, Petrovsk and Baku on the Caspian, and the various Black Sea and Baltic ports. The main line to the south passes through the manufacturing and mining region round Tula to Kieff and to Kharkoff, the centre of the Donets industrial region. This and the other southern lines carry large freights of wheat for export from the ports of Odessa, Nicolaieff, Kherson, and Taganrog. The most important industrial centres of Poland are Warsaw, on the Vistula, and Lodz, both growing rapidly. Great fairs are held annually in many towns, that of Nizhni-Novgorod being the most important.

The export trade of European Russia is in cereals—wheat, barley, rye, oats, and maize—shipped chiefly from the Black Sea ports; petroleum from Batum and Poti; timber and pulp wood from Riga, St Petersburg, Kronstadt, Archangel, Windau, and Libau; flax, linseed, eggs, and dairy produce principally from the Baltic ports. The imports are raw materials, wholly or partially manufactured goods (including hardware, machinery, and textiles), tea from China and in recent years from Ceylon, fish, spirits, coffee, and other colonial produce. During the period 1907–11 the imports of agricultural machinery increased from two and a half to five and a half million

pounds. The largest trade is with Germany, and next with the United Kingdom, which takes cereals, timber, tow, flax, linseed, and eggs, and sends in return machinery and iron goods, coal, wool from Australia, some cotton from India, woollens, and fish.

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## CHAPTER XVII.

### MEDITERRANEAN LANDS.

THERE is a similarity of the climate and productions of the lands bordering the Mediterranean Sea which makes them one great natural region. The southern boundary is formed by the arid Sahara, a far more formidable barrier than the mountainous regions of the Pyrenees, the Central Plateau of France, the Alps, the Balkans, and the Caucasus, whose southern slopes are its northern limit. The waters are deep, the coasts are broken, and the inland regions are mountainous, so that the configuration favours communication by sea, which has always played an important part in the history of the Mediterranean region. The eastern limit of the region is naturally the Syrian and Arabian deserts in the south, but as the climate and productions of Persia are very similar, the eastern boundary may be extended in the north to the Persian deserts.

The peninsula of Italy divides the sea into two basins, the Eastern and Western Mediterranean. The Eastern Mediterranean consists of the sea extending from the Levant to the Gulf of Gabes. Two great extensions open to the north—the island-studded Ægean

leading to the Black Sea, and the Ionian Sea leading to the Adriatic. Except for the irrigated Nile valley, the southern lands are almost desert. A number of narrow and short valleys are found round the coasts of Asia Minor and the south of the Balkan Peninsula, and small fertile basins exist at higher levels. Much of the land of these two peninsulas is rugged mountain-land. The only extensive alluvial plain opening into the Eastern Mediterranean basin is that of the Po, at the head of the Adriatic, which, except here and in Apulia, is bordered by mountains. The Western Mediterranean is bordered by the foreland of the Atlas Mountains, the valleys of Spain at the foot of the plateau (*meseta*), the coastal lands of southern France and the lower Rhone valley, the Riviera, the western slopes of the Apennines and the hilly lands that skirt them, and contains the islands of the Balearic group—Corsica, Sardinia, and Sicily. The Majerda, lower Rhone, and Ebro are fertile alluvial valleys opening to the Western Mediterranean. The plains of Andalusia and the lower Tagus may be considered with this region, although they are connected with the Atlantic.

The Dardanelles and Bosphorus, the Vardar-Morava valleys, the Alpine passes (especially the Brenner), the Rhone valley, the Carcassonne Gap between the Central Plateau of France and the Pyrenees, and the Strait of Gibraltar have been the chief passages from this region to the rest of Europe. The connection with Asia has been between the Levant and the Euphrates by the Nile and the Red Sea, or by more difficult caravan routes across the Syrian tableland or Armenian plateau.

**Climate and Productions.**—The climate of Mediterranean lands resembles that which we have studied in Victoria, south-western Australia, and the Cape peninsula of South Africa. The summers are hot, but perfectly dry. Most rain falls in winter, or else in autumn or spring.

The dry summer is the resting-time for plants. It permits the ripening of fruits of all kinds, and allows them to be preserved by being dried in the sun.

The Mediterranean region, therefore, is a fruit-producing region, where the softer fruits can come to perfection.

The vine is the most important, and is grown for its fruits—(a) fresh grapes; (b) dried raisins or currants, especially in the eastern regions inhabited by Mohammedans, who are prohibited by their law from drinking wine; and (c) grape juice, which is fermented into wine in the western region.

Oranges and lemons, figs and olives, peaches and apricots, carobs (locust beans), pomegranates, and, in the oases of the African desert, dates are among the other fruits of this region.

The oak-tree is very important, one species yielding cork; another, indigenous to the Levant, acorn-cups, known as valonia, which is used by tanners. Maize is the most important cereal in this region; rice and cotton are grown in the irrigated lands of the Po and other rivers. The Walachian plain, which produces much wheat and maize, is rather to be considered with Russia than with Mediterranean countries. The Nile forms a strip of fertile land through the desert, where cereals, cotton, and pulses are cultivated. Throughout

the Mediterranean region, lucerne, a kind of clover, is a most important crop.

In the mountain regions sheep and goats are kept, the flocks being driven up to the hills in summer and down to the plains in winter. Mules and donkeys are more common than horses. Dairy produce is of little importance, except in northern Italy, where cheese is made. Oxen are used for draught purposes. Fowls are very numerous.

The minerals are not important except in the Balkan and Iberian Peninsulas, where the older rocks are rich in many metals, especially copper and iron.

Domestic industries are the most important over much of this area. Modern manufacturing processes are adopted in the larger cities, especially in the west. The valleys of the Po and Rhone are busy industrial regions.

The trade of the different countries has been described in Chapter IX. of the first part of the author's book in this series on the *Commercial Geography of the British Isles*, pp. 113-117.

## PERSIA.

Persia is a desert plateau, with a more fertile western and north-western margin, especially where irrigated, and dense forests on the northern slopes of the Elburz Mountains south of the Caspian. It may be described with the Mediterranean region, as most rain falls in winter, and the natural products are of Mediterranean type. Fruits, rice, wheat, cotton, wool, silk, and opium are the chief vegetable products, and carpets and hides the principal manufactured articles. The country appears to possess valuable

mineral resources, including copper, lead, tin, iron, and coal, but the lack of transport facilities prevents their development. In the south-west petroleum is obtained, and a pipe-line conveys the oil to the refinery at Abadan. The trade in the north is now mainly in Russian hands, from Meshed in the north-west to Ashabad on the Trans-Caspian Railway, and from Tehran or Teheran, the capital, to Resht on the Caspian. The bulk of the trade from the north-west, where Tabriz is the chief centre, passes through the Black Sea ports of Trebizond and Batum. Direct overland trade with India has been opened from Kerman and Seistan by the Nushki route through Baluchistan, and also through Afghanistan; but most still passes through Ispahan and Shiraz and the Persian Gulf ports, of which Bushire, Bundar Abbas, and Linga are the most important. Within recent years several roads have been built, but transport, mainly carried on by camels and mules, is both slow and costly, and often beset with danger. Proposals have been made to construct a railway across Persia to form part of an Indo-European system. Concessions have been granted for the building of a line from Julfa, on the Russian frontier, through Tabriz to Kazvin, and of a line from Mohammerah, at the head of the Persian Gulf, to Khoranabad. The Karun River is navigable as far as Shuster.

#### EGYPT.

Egypt is a desert except on either side of the Nile where the waters cover the land in times of flood, or where it is irrigated by pumping the water from the river. The flood-waters deposit a fertile mud, which

comes from the volcanic plateau of Abyssinia. By means of great dams at Assuan, Asyut, and at the head of the delta, the waters of the river are regulated, and irrigation is assured at all seasons, permitting as many as three crops to be raised in a year. Rice, maize, sugar, wheat, cotton, lentils and other pulses are grown. The cultivation of early vegetables for the European, as well as for the local, markets is extending. The chief city is Cairo, at the head of the delta; the chief port Alexandria, at the west of the delta, through which nine-tenths of the trade passes; raw cotton forms over 75 per cent. of the exports. By railway and steamer the desert is crossed to the south. The narrow isthmus of Suez is traversed by a canal about 90 miles long and 26 feet deep, between Suez on the Red Sea and Port Said on the Mediterranean, through which pass the greater number of steamers between Europe and India, Australia, and the Far East. Egypt is controlled by Britain, although nominally Turkish.

#### THE OTTOMAN OR TURKISH EMPIRE.

This great empire includes the desert region of Arabia, with its date-producing oases and coffee-growing region in the south-west; the alluvial plains of Mesopotamia, at present unproductive, but which will become as rich as Egypt when properly irrigated; Syria and Asia Minor, with fertile coasts and drier and more barren hinderlands; the eastern part of Thrace, growing Mediterranean produce; as well as feudatory states, such as Egypt, Cyprus, Crete, which are not actually controlled by the Ottoman Turks.

The Arabian region is noted for its coffee and gums;

the Levant for its raisins and other fruits, silk, wool, and valonia; and European Turkey for its attar of roses. Cotton cultivation is extending in Asia Minor, especially in the Adana province, a considerable part of the produce being consumed in the mills of Tarsus and Adana.

The empire possesses valuable stores of minerals, especially in the Asiatic provinces, although few are yet exploited. Silver and silver-lead are mined in Konia, copper near Diarbekir, emery at Smyrna, coal and lignite at Heraclea on the Black Sea, salt in the Yemen, and iron in Aleppo and Adana.

Commercially the Ottoman Empire is not so important as the much smaller state of Switzerland. The chief products exported are silk, fruits (figs and raisins), cereals, coffee, mohair, opium, valonia, cotton, minerals, tobacco, and eggs; the principal manufactured article being carpets. Sugar, linen, quilting, cotton-yarn, coffee, petroleum, flour, and rice are the most valuable imports.

From Aleppo a railway runs southwards through Syria to Medina, with branches to the coast at Tripoli, Beirut, and Haifa. Jaffa is connected by a line with Jerusalem. In the Yemen, a railway is under construction from Sanaa to the coast at Hodeidah. From Skutari, on the Bosphorus opposite Constantinople, a railway has been built to Eskişehir, where it branches eastwards to Angora, and southwards to join the Anatolian railway which runs from Smyrna, the principal port of Asia Minor, through Manissa, Afium Karahissar, and Konia to Bulgurlu, and will eventually form part of the projected Baghdad railway, terminating on the Persian Gulf. From Smyrna a line has

been built to Cassaba, and another through Aidin as far as Isbarta.

The position of Constantinople on the crescent-shaped inlet of the Bosphorus known as the Golden Horn ensures it a great entrepôt trade. It lies where the mainland route from southern Europe crosses to Asia Minor, and by it all vessels trading between the Black Sea and the Mediterranean or more distant ports must pass. From the capital a railway runs through Saloniki (or Salonica) to Monastir.

### GREECE.

Greece is a barren, mountainous land with a number of small fertile plains. Cereals are the chief crops, but the principal exports are currants and minerals, especially the fine manganese iron ore and hematite from the Laurium region. By draining Lake Copias in Bœotia, over 50,000 acres have been added to the area under cultivation, and on the reclaimed land cotton can be grown. Wines, tobacco, valonia, olive-oil, and figs, are minor exports. Cereals, textiles, timber, coal, and food products are the most important imports.

Piræus, the port of Athens, is also the principal industrial centre of Greece, containing several iron-works, shipbuilding yards, distilleries, textile-mills, and oil-factories. From Piræus, a railway runs northwards through Athens and Larissa to the northern frontier, with branches to Kalabaka and to the coast at Kara Baba and Volo, the port of Thessaly. From Athens, a line runs through Corinth along the coast to Kyparissia, and then inland to join a branch which crosses the Morea from Corinth to Kalamata. Syra, or Her-

mupolis, is the coaling-station and commercial centre of the Archipelago, and exports emery and iron ore. A ship-canal across the isthmus of Corinth shortens the voyage between the Ægean and Ionian Seas.

### ITALY.

The Apennines divide Italy into three lowland regions—the Paduan (Lombard-Venetian) Plain, the Western Foreland between Tuscany and Campania, and the Eastern Apulian Foreland—to which must be added the islands of Sicily and Sardinia.

The north is economically by far the most important part of Italy. Cattle feed on the meadows of the surrounding mountains, and on the rich, moist low-lying lands near the Po, and silkworms on the mulberries of the forests, whose trees yield timber. Olive-groves and vineyards exist on the southern slopes of the Alps turned to the sun, but not on the northern slopes of the Apennines. The alluvial lands are irrigated by a great canal system, which the melting Alpine snows keep well supplied with water even in the driest summer, permitting two, three, or even more crops to be gathered every year. Rice can be grown, and maize (for polenta), pulses, flax, and other plants used for food or industry. In Piedmont and Venetia there is an increasing cultivation of sugar-beet. The irrigated meadow-lands can be cut four or five times a year, and supply food to the cows, whose milk is made into Gorgonzola and other cheeses.

The peninsular hilly lands are terraced and cultivated, especially in western Italy round the Arno, and in the Alban Hills. Olive-groves abound, and olive-oil is manufactured, that of Lucca being noted. Here the

flocks and herds are driven to the upper grass-lands of the Apennines in summer and to the plains in winter. The goats and their keepers have destroyed much of the old forested land, and caused great deterioration in the productivity of the hilly land.

In Sicily the irrigated lands are of exceptional fertility, yielding crops at all times. Excellent crops of wheat, maize, and rice are raised, and olive, orange, lemon, and fig groves and vineyards are found on the terraced lands. Even cotton is grown.

The resources of Sardinia have not been greatly developed; the raising of cattle and horses is the principal industry, but cereals, wine, oil, and cheese are produced and exported; the south-west has a store of minerals, and lead ore is shipped to the smelting-works at Pertusola. A large reservoir is being constructed on the river Tirso for the purpose of irrigating the plain, which extends northwards from Cagliari, and of supplying power to the mines, which at present are compelled to pay a high price for fuel.

Italy has few minerals except the salt of its lagoons, the sulphur of the volcanic regions, the white marble of Carrara, and the iron ores of Elba and Sardinia. Silver, lead, and zinc are also found in Sardinia. Coal is almost absent, but some brown coal is mined in Tuscany. Petroleum has been found in central Italy and in Sicily.

**Manufactures.**—The water-power of the Alpine rivers is utilised, especially for generating electricity, which is perhaps more used in northern Italy than elsewhere. Silk-spinning is carried on in all the villages and towns at the mouths of the Alpine valleys, and great silk-factories have been built at Bergamo, Brescia,

Como, and Milan. Cotton, wool, and jute are also manufactured in the northern towns. Mechanical engineering has made great progress in Italy within recent years. The largest iron and steel works are at Terni, where railway material, armour-plate, and ordnance are manufactured; war material is also manufactured at Pozzuoli, in Campania. Turin, Milan, Savona, along with other northern towns, and Naples are important engineering centres. At Turin and Spezia the manufacture of motor vehicles is one of the chief industries. The principal shipbuilding yards are at Leghorn, Genoa, Spezia, and Naples. Straw-plaiting is the characteristic industry of Tuscany. Venice (Venezia) is noted for the manufacture of lace and glass, Padua (Padova) for stringed musical instruments, and most of the large towns, especially Florence, Rome, and Naples (Firenze, Roma, and Napoli), for mosaics, sculptured figures, furniture, coral, and other jewellery, and *objets d'art*.

The routes from Italy to the north run on the east and west sides of the peninsula. A great line crosses the Apennines from Florence to Bologna, where it meets that running parallel to the old Æmilian Way from Ancona to Piacenza. From Turin the Mont Cenis, from Milan the St Gotthard, from Domodossola the Simplon, from Verona the Brenner lines cross the Alps; and the eastern routes diverge from Venice by Udine and Pontafel to Klagenfurt and Vienna, and by Görz to Trieste, Laibach, and the Save. The Sicilian railways are connected with those on the mainland by ferry-boats which carry the trains across the straits from Reggio to Messina.

Venice (Venezia) is the eastern and Genoa (Genova)

the western port of the northern region, Leghorn (Livorno) of Tuscany, Naples of the Campagna, Palermo and Messina of Sicily, and Cagliari of Sardinia. Brindisi and Naples are ports used by vessels for the Far East, and Genoa for trans-Atlantic liners.

Since the opening of the Alpine tunnels the overland trade with northern Europe, especially with Germany, has developed, partly at the expense of the sea-borne trade with the United Kingdom. The principal exports are raw silk and silk goods, cotton tissues, olive-oil, wines, eggs and cheese, fruits, hemp, hides, sulphur, and automobiles; the imports, wheat, coal and coke, raw cotton, silk and wool, machinery, wrought iron and steel, timber, rubber, and cured fish. Most trade is done with the German Empire, the United Kingdom, France, Austria, Switzerland, and the United States.

#### SPAIN AND PORTUGAL.

The bulk of the Iberian Peninsula is a plateau, separated from the Pyrenees by the plains of the Ebro, and from the Sierra Nevada by the plains of the Guadalquivir or Andalusia. These two plains and the smaller ones on the west and Mediterranean coasts are carefully irrigated and cultivated, while the hills around them are elaborately terraced. On these terraced hillsides and coastal plains oranges, lemons, grapes, figs, olives, and other fruits are grown. Maize, wheat, tobacco, and rice also flourish on the alluvial plains. From the eastern provinces large quantities of nuts, especially Barcelona nuts and almonds, are obtained. Onions and garlic are important horticultural products. Great groves of cork-oak are found in the

extreme south of Portugal and of Spain. The north-western and northern mountains receive abundant rain at most seasons, and climatically belong to central Europe. They yield timber. The climate of the plateau is one of extreme temperatures and great dryness, which prevents cultivation without irrigation. In Old Castile, which is crossed by numerous rivers from the rainy regions of the extreme north, great irrigation-works have been carried out, and the region is noted for its excellent wheat. Elsewhere on the plateau the tending of merino sheep and goats is the most important occupation. The cultivation of sugar-beet is important, and widely distributed in the northern provinces and the central plateau, as well as in the hot south coastal districts where irrigation is necessary. Sardine and tunny fisheries are carried on round the coast.

Spain is rich in minerals. Iron, coal (in Asturias and Catalonia), manganese, and other metals occur in the Cantabrian Mountains of the north; copper, silver-lead, mercury, iron and other ores, and coal are mined in the Sierra Morena in the south. The crude or half-refined ores are exported to Britain, Germany, Belgium, and other countries to be refined.

Barcelona, the chief industrial centre of Spain, is noted for its manufactures of silk and cotton. Cloth is made at Palencia, pottery at the royal works at La Granja north of Madrid, and tobacco is manufactured at Seville, and iron and steel at Zaragoza. Among minor industries are the manufacture of paper, leather goods, chemicals, and cement.

The railway lines radiate from Madrid, in the centre, but, with few exceptions, the important towns are on

the coast. Barcelona is the chief Mediterranean port, and acts as the outlet for the Ebro valley. Valencia, Malaga, on the Mediterranean, and Cadiz, on the Atlantic, are important fruit and wine ports. Seville can be reached by steamers. Huelva is the outlet for the rich copper-mines of the south-west. In the north, Gijon is the outport of the Asturias coalfield, and Santander and Bilbao of the iron-mines in the Cantabrian Mountains.

The chief exports of Spain are the products of its vineyards, orchards, and mines, live-stock, and food substances. Cotton, raw and manufactured, machinery and other manufactured iron goods, and chemicals are the most important imports.

The chief exports of Portugal are wine from Oporto, sardines, cork, fruits, olive-oil, and copper ore from the south through Lisbon, from which cottons are exported to Portuguese colonies. Large quantities of cacao from São Thomé are re-exported from Lisbon. Cereals, cotton and other textiles, coal, cod-fish, industrial machinery, sugar, rice, maize, and other colonial products are the chief imports. Lisbon, on the estuary of the Tagus, is an important port for vessels plying between South America and Europe. Textile manufactures are carried on in the vicinity of Oporto.

### THE BARBARY STATES.

Tunis, a French protectorate, and Algeria, which forms part of France, are at present the most important of the Barbary States. They consist of a coastal range, behind which stretches the fertile Tell, drained in the east by the Majerda, and in the west by the Shelif. Here vines, olives, and other Medi-

terranean fruits, cereals, including wheat, barley and oats, maize, and to a smaller extent tobacco, colza and other oil-seeds, are grown. On the high plateaus between the Mediterranean Atlas and the Saharan Atlas the alfa or esparto grass is the chief economic product. Goats and sheep are the most important animals of the plateau, cattle and horses of the Tell, and camels in the desert, where the oases, natural or formed round artesian wells, support date-palms under whose shade maize, millet, root-crops, and fruits mature. Extensive phosphate deposits are being worked near Kef, Tebessa, and elsewhere, and now furnish the most valuable export from Tunis. Iron, zinc, and lead are also exported; petroleum has been discovered in Oran. Algiers is one of the principal coaling-stations in the Mediterranean.

The chief railway route traverses the Tell from Tunis by Constantine and Algiers to Oran. Long lines branch from it southwards to the desert, in the east to Tebessa, a phosphate region, and to Biskra, in the west through Aïn Sefra to Colomb Béchâr in the south-east of Marocco, and shorter ones northwards to the ports of Bizerta, Bône, Philippeville, and Bougie. From Tunis a railway runs south-west to the phosphate districts of Kef and Kalaa Djerda, and southwards along the coast through Susa and Sfax, with branches reaching almost to the western frontier of Tunis.

It has been proposed to extend one of the southern lines across the desert to the Sudan, but meanwhile communication is maintained by camel caravans. The principal exports from Tunis and Algeria are wines, phosphates, cereals, olive-oil, esparto grass, iron, zinc, and lead ore. The principal imports are textiles,

machinery, and hardware. The trade is mainly carried on with France.

Marocco, nominally an independent sultanate, but practically a French protectorate, consists of a coastal plain, bordered by an elevated undulating country, which gives place in the south-east to the lofty mountains of the Great Atlas, beyond which the country forms part of the Sahara region. A rich black earth, similar to that of southern Russia, extends over large areas of the coastal belt, and renders this region very fertile. The rainfall is well distributed along the coast and on the western slopes of the Great Atlas mountains, but diminishes on the plateau as the distance from the sea increases, and also towards the southern part of the country. Along the coastal plain and on the lower parts of the plateau all Mediterranean plants could be cultivated; in the former, barley, wheat, and maize are grown. The steppe region of the plateau furnishes excellent pasture-land for large herds of cattle, sheep, and goats, as well as for camels, which are reared for transport. In the Sahara zone of south-eastern Marocco, the wadis, which flow southwards towards the desert, have formed oases, such as Tafilet, where the date-palm flourishes under irrigation.

The chief exports are cereals, especially barley, eggs, skins and hides, wool, oxen, dates, almonds, and gums. The caravan routes diverge from Marakesh, or Marocco city, in the south-west, which is served by the ports of Casablanca (the principal port in the country), Mazagan, Mogador, and Saffi, and from Fez in the north, where the leading ports are Tangier and Larache. A considerable trade also passes across the

frontier to Melilla. There are practically no made roads in the country, and railway construction has not yet begun.

Tripoli, -annexed by Italy in 1912, is essentially part of the Sahara region, only a very small area of the country falling within the Mediterranean region. The country contains few minerals, and its agricultural products, chiefly barley and wheat, are scanty. Where the rainfall on the steppe is sufficient, cattle and sheep can be reared. Cyrenaica, a deeply dissected limestone plateau in the east of Tripoli, possesses considerable tracts with a rich soil, but the rainfall is irregular and inadequate for cultivation on a large scale. Barley is the chief crop, and the surplus obtained in good seasons is mainly exported to Scotland for use in the distilleries.

Tripoli and Benghazi were formerly the Mediterranean ports at the end of two important trade-routes across the Sahara, but the opening of more accessible routes to the Sudan has reduced the caravan trade to the Mediterranean.

The principal exports from Tripoli are esparto grass, barley, and sponges.

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## CHAPTER XVIII

### FRANCE

**Position and Configuration.**—France lies in the centre of the land hemisphere, between 43° and 51° N. lat. On three of its sides it is bordered by water—the Mediterranean in the south-east, the Atlantic in the

west, and the English Channel on the north-west. On the south-west it is separated from Spain by the Pyrenees; on the east from Italy and Switzerland by the Alps and the Jura; and on the north-east from Germany, Luxemburg, and Belgium by the Vosges and the Ardennes. A great Central Plateau rises in the southern half of the country, separated from the Alps by the valley of the Rhone, and from the Pyrenees by the valley of the Garonne, and drained by the Garonne and the Loire and their tributaries. From this plateau north-eastward to the Vosges runs a line of higher ground, the plateau of Langres, from which flow the Seine and its chief tributaries. The north of France is a plain, with low hills rising above it, especially in Normandy and Brittany.

**Climate.**—The climate of the north of France resembles that of the south of England. The winters are not very cold; the summers are not excessively hot. Rain falls all the year round, but most abundantly in autumn and winter, and more heavily near the coast than farther inland. South of the Loire there is a marked dry summer, which is of great importance for ripening the vine. In the south the climate is of the Mediterranean type—almost rainless in June, July, and August, and with most rain in spring and autumn.

**Products.**—Forests occur on the slopes of the mountains, on the edge of the Central Plateau, and in scattered groups, sometimes of considerable size, on the plains. Great pine-woods have been planted on the sandy Landes, south of the Gironde; oak and beech are characteristic of the northern plains, pine-woods of the mountain forests, the chestnut of the

Cevennes, the walnut of Poitou, and cork-oak and olive-groves of the Mediterranean region.

The pasture-lands of France consist of mountain meadows in the Pyrenees, on the Central Plateau, and in the Alps, and of grassy plains and hills in the north. Horses, cattle, and pigs are reared in Brittany and Normandy. Cattle are kept on the upper meadows and on the wetter lower slopes of the mountains, but are replaced on the higher regions facing the Mediterranean by sheep, which are grazed on the mountains in summer and on the deltaic plains of the Rhone in winter.

The north of France is famous for its apple-orchards and for its cider. Industrial plants, especially sugar-beet and flax, are cultivated in the north-east. The upper Allier and Saône and the middle Seine basins and the extreme north-east of France produce excellent wheat. The lower lands of Aquitaine produce some wheat, and maize and tobacco are also grown. Almost everywhere in France, except in the north, the vine is important, and is made into wine south of a line from the mouth of the Loire to the Ardennes. The vineyards of Medoc, west of the Gironde estuary, produce the wines known as Bordeaux or clarets. The south is in a pre-eminent degree the land of the vine and olive. The vineyards of Languedoc are the most productive in France; but the vine is grown throughout the Rhone-Saône valley and as far north as Burgundy and Champagne, where the wines known by these names are produced. The olive-oil of Provence is remarkable for its delicate flavour. Oranges, figs, and other Mediterranean fruits are also grown in

the south, and the mulberry is cultivated as food for silkworms. Within recent years, chiefly as a result of improved transport facilities and the extension of irrigation, a remarkable development has taken place in the production and distribution of flowers, fruits, and vegetables, especially in the neighbourhood of Paris, where rich manures are obtainable from the city, and in the Rhone valley. From Avignon, these products can be delivered in London in thirty-seven hours, and in Berlin in seventy-two hours. Along the Atlantic coast the fisheries are important; large numbers of the inhabitants of Brittany are engaged in the sardine industry, which, however, has suffered within late years in competition with the Spanish and Portuguese fisheries.

**Minerals and Manufactures.**—France is rich in iron, which is found round the Central Plateau and in the north-east (especially at Briey, where the output has increased from one and a half million tons in 1904 to over ten millions in 1911), near Cherbourg, and at Châteaubriant and Segré in the west. France ranks second to China in the world's production of antimony, found mainly in the Auvergne; other important minerals are silver, lead, zinc, and salt. Coal, however, is relatively scarce. The Pas-de-Calais and the Nord basins are the most important coalfields, and are the centre of a rich manufacturing district. Round the Central Plateau are grouped the small fields of Blanzey, St Étienne, Alais, Carmaux, and Comentry, which support a variety of industries. In the iron and steel industry the largest number of blast-furnaces are found in the eastern districts, with 80 furnaces out of a total of 131 for the whole of France. Iron, steel,

and machinery are made at Le Creusot near the Blanzky coalfield, cannon and other firearms at St Étienne, steel on the Alais and Carmaux fields, porcelain and glass round Limoges, woollen and textiles in Langue-doc, and silk at Lyon and St Étienne. On the Valenciennes field, Lille manufactures machinery, railway material, textiles, and chemicals; in this region the motor-car industry has developed very rapidly, there being 54,000 private cars in France in 1910 in comparison with less than 2500 in 1900. Large steel-works are also in operation at Rouen and Dunkirk. Valenciennes, Cambrai, and towns in Normandy and Maine are noted for fine linens and lace. Amiens is the principal seat of the jute industry. Woollen goods are made at Roubaix, Tourcoing, and other towns, and south of the Ardennes at Reims and at Elbeuf on the Seine. On the western slopes of the Vosges are a number of small towns engaged in manufacturing cotton, but one-third of all the cotton spindles in France are at work in Normandy, the chief seat of the industry being Rouen and the surrounding district of the lower Seine, where the raw material is easily obtained from America, Brazil, and elsewhere. Rich deposits of bauxite, especially at Baux and Brignoles, whence the output is shipped from Marseilles, Toulon, and St Raphael, have given rise to a remarkable development of the manufacture of aluminium, for which there is an increasing demand in the electrical industries. Large factories have been established near Marseilles and at Les Aygalades.

Marseilles is an active industrial centre, with oil and sulphur refineries, soap and chemical works, sugar and flour mills, all utilising the raw materials dis-

charged at the wharves of the port. Cane-sugar is also refined round Bordeaux and Nantes. Paris is the centre for the manufacture of *objets d'art*, clothing, &c., and near it are the famous porcelain-works of Sèvres. Clocks and watches are made in the neighbourhood of Besançon.

Shipbuilding is important along the Mediterranean seaboard, the principal yards being at Marseilles, La Ciotat, La Seyne, and Port de Bouc; Toulon is a great naval station. On the Atlantic coast Dunkirk, Le Havre, Rouen, St Nazaire, and Nantes are the chief centres of the shipbuilding industry.

**Internal Communication and Trade Centres.**—Water-traffic is exceedingly important, and great attention is paid to the canalisation of rivers and the construction of canals. The heaviest water-traffic is between Paris and the northern industrial region by the Oise, from which canals run to the Somme, Sambre, Schelde, Lys, and other northern rivers, as well as to Dunkirk, on the North Sea. The Aisne is connected by canal with the Marne, from which canals communicate with the upper Saône and with the Rhine at Strassburg. The Seine is canalised from the Yonne to its mouth, and connected by canals with the Loire and the Saône, the latter continuing the traffic down the Rhone to the Mediterranean and up the Doubs to the Rhine. The Canal du Midi joins the Mediterranean to the Garonne.

A network of railways covers the country, converging from all parts upon Paris. The Western line opens up Normandy and Brittany, and is connected with the chief northern ports, Brest, Cherbourg, Le Havre—the most important—and Dieppe. The Northern line

connects the capital with the northern industrial district and the northern countries of Europe, and through Calais and Boulogne carries a large proportion of the Channel passenger traffic. The Eastern line passes to the upper Meuse and Moselle, the route by Nancy forming part of the Oriental Express route to Constantinople, that through the Burgundian Gate leading to Switzerland. The great Paris-Lyon-Mediterranean line passes by the Yonne to the Saône-Rhone valley, connecting with the Swiss lines through Dijon and Pontarlier, and with the Italian lines by Macon and the Mont Cenis tunnel or by Marseilles and the Riviera. This line carries more traffic than any other in the country. The Orléans line, the only other important line with a Paris terminus, sends branches from Orléans to St Nazaire by Nantes, to Bordeaux by Poitiers, and to Toulouse by Limoges. The poorer parts of the west are served by the State line. Bordeaux, Toulon, and Cette are connected by the South line (Midi), which runs to the Spanish frontier both east and west of the Pyrenees. The central Pyrenees have been tunnelled at Canfranc, and the railway is being continued from Oloron through Jaca to Huesca. International lines are also to be built from Ax-les-Thermes, in the Ariège, to Ripoli, in Catalonia, and from St Giron through Sort and the Noguerra Palarese valley to Lerida.

**Ports.**—Marseilles (Marseille), the most important as well as the most ancient port in France, is situated on a magnificent harbour to the east of the Rhone delta, and not on the delta itself, owing to the shallowness and variability of the distributaries. The port is being connected with the Rhone by a canal. It is

the outlet for the produce of the Rhone valley, and the great storehouse into which are brought raw silk from the East to be manufactured at Lyon, raw cotton from Egypt and India, wool from Australia, palm-oil seeds from West Africa, linseed and other oils from India, copra from the South Seas, wheat from the Black Sea, and sheep and wines from Algeria. Cette is the wine-port of fertile Languedoc.

Bordeaux, at the head of the Gironde estuary, is the outlet for the wine of the district, and carries on a large trade with South America, where finer manufactured articles of French, and particularly Parisian, origin are in great demand. In addition to wine, dried plums and ligneous products, from the Landes, are exported. Rubber from the French African colonies, wool from the Plate, coal from the United Kingdom, iron ore from Spain, sulphate of copper, which is required by the vine-growers, and bananas from Teneriffe are among the chief cargoes brought into its wharves. Accommodation has been provided for deep-draughted vessels at Pauillac, nearer the mouth of the estuary; but many commodities, such as grain and rice, which cannot reach Bordeaux conveniently by water, are conveyed by rail from Marseilles, even to points actually within the commercial zone of Bordeaux.

La Rochelle-Pallice has for its hinterland a rich wine-producing and dairy-farming country, but the railway system which serves this part of the coast is isolated from the rest of France by the Orléans Railway, which diverts the traffic either to Nantes and St Nazaire or to Bordeaux. The import trade includes coal from the United Kingdom and Germany, timber from northern Europe and America, wines and

phosphates from Algeria. The principal exports are wines, brandy, and pitwood.

Nantes, at the mouth of the Loire, has a large trade with the West Indies and Central America, importing sugar in large quantities, and timber and coffee from Brazil; but coal is the principal import. In addition to preserved fruits of various kinds, it exports the iron ore from the mines at Châteaubriant and Segré.

Le Havre, at the mouth of the Seine, is the second port of France, and is a European warehouse for coffee, imported mainly from Brazil; along with Bremen it forms the principal cotton-market on the Continent. Cotton, wheat, and tobacco are imported from the United States. The port is the outlet for the cottons manufactured in the lower Seine.

Rouen, which enjoys the advantage of a maritime waterway to the sea and a fresh-water route to Paris, is an important distributing centre. The raw material for its oil-refineries is imported in tank ships from the United States. Other valuable imports are Algerian and Tunisian wines, coal (mainly from the United Kingdom), and timber.

Dunkirk (Dunquerque or Dunkerque), although an artificially created port, now ranks third among the ports of France; it competes with Le Havre for the trade of northern France, but finds a rival in the port of Antwerp. It is a large market for wool; the first bale was imported in 1880, and now the annual value of the wool imports of Le Havre exceeds £15,000,000, mainly from Australia and the Argentine. It imports from the United Kingdom and Spain much of the raw material required in its shipbuilding yards, timber

from Scandinavia and Canada, rice from Indo-China, and jute from India.

The principal imports at Calais are coal and iron ore, and wool and hides, chiefly from Australia.

Le Havre and Cherbourg are the passenger ports for the United States. St Malo, Cherbourg, Dieppe, Boulogne, and Calais are important packet-stations for England, to which dairy and horticultural produce and other goods are exported. All these are fishing-stations. Boulogne, Dunkirk, and Bordeaux are great fishing-ports, sending vessels to the North Sea, the Iceland and the Newfoundland fishing-banks.

**Trade.**—The foreign import trade by land is chiefly in coal, iron, and zinc along the north-east frontier; cattle from Austria; cheese, clocks, and watches from Switzerland; and cattle, raw silk, and ice from northern Italy through the Mont Cenis tunnel.

In food-stuffs France is more self-supporting than Britain or Germany, and consequently imports little. The chief imports are raw materials, wool, silk and cotton, coal and timber, oil-seeds, rubber, machinery, hides and furs, and cereals; while the manufactured articles form a smaller proportion of the imports than in either the United Kingdom or Germany. On the other hand, France exports little raw material, mainly silk and wool, which in the manufactured state form, along with cotton goods, the most important exports.

Wine, small-wares, leather and leather goods, linens, and motor-cars are next in importance, followed by elaborated products of the farms, cheese and butter, skins and furs, and chemical produce. The United Kingdom sends coal, woollen goods, machinery, cotton

goods, and chemicals, and takes from France silk and woollen goods, motor-cars, wine, sugar, butter, leather, lace, brandy, and eggs.

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## CHAPTER XIX.

### ALPINE AND DANUBIAN LANDS.

#### SWITZERLAND.

SWITZERLAND consists of the central ranges of the Alps, the great valleys running between and from them, the plateau to the north, and part of the Jura Mountains, which form the western limit of the plateau. The climate and products of the plateau resemble those of southern Germany; those of the Rhone and Ticino valleys resemble the conditions of northern Italy.

Switzerland, in ordinary parlance, means the high **Alpine region**, the beautiful scenery of which annually attracts thousands of tourists to the country, rendering hotel-keeping an important and profitable occupation during the summer. It is estimated that the capital invested in hotel enterprises amounts to £32,000,000, and that foreign tourists annually spend over £6,000,000 in the country. The Alpine pastures support large numbers of cattle and goats, which are driven to the valleys in winter. These pastures are too remote from a market for the milk to be sold in a fresh state, and the surplus is either made into cheese or condensed and canned. The Switzerland of commerce, however, lies on the plateau, and along the great lakes and rivers which flow out of them, more particularly the Rhine, Reuss, Aar, and Rhone. The

vine is cultivated on the lower southern slopes to the west of the plateau, and in the Rhone and Ticino valleys. Cereals, potatoes, and fodder plants are grown on the plateau. Bee-keeping is important, and the silkworm is reared in the Ticino valley and the Grisons.

Switzerland is poor in minerals, but some iron has been found near Meiringen in the upper Aar valley, and exists in the Jura. Water-power is abundantly supplied by innumerable waterfalls and rapids, fed by the Alpine snows, which can either be used directly for turning machinery or transformed into electric power. All the newer mountain railways are electric, and electric lighting is universal.

The industrial activity of Switzerland is very great, and supports two-fifths of the inhabitants. Machinery of all kinds is made at Zürich and Winterthur. Cotton is manufactured at Zürich and Luzern, embroideries at St Gallen (St Gall) and Thurgovie, and silk at Zürich and Basel. Clocks and watches are made at Geneva, and at Le Locle and Chaud de Fonds in the Jura. Electrical apparatus is manufactured at Geneva and Neuchâtel; scientific instruments and motor vehicles are made at Geneva. The manufacture of chocolate is important at Luzern and Neuchâtel, and of cheese and condensed milk at Bern and Luzern. There are large chemical-works at Basel and Geneva. Straw-plaiting and the making of straw goods are carried on at Argovy, and the manufacture of shoes at Soleure.

**Routes.**—Switzerland is crossed by a number of important trade-routes. Those from the west enter at Geneva or Basel at the south and north ends of the Jura, or else cross these mountains to Lausanne

and Neuchâtel. Geneva and Basel are joined by a line at the eastern base of the Jura, which passes through Neuchâtel, and by another which runs by Lausanne and Bern. From Basel or Bern the line to the east passes by Zürich through the Vorarlberg tunnel; and to the south by Luzern, the St Gotthard tunnel, and the Ticino valley by Lugano to Milan; a third route to northern Italy is provided by the line running eastwards from Geneva through Brigue and the Simplon tunnel. From Brigue the railway is continued through Andermatt to Dissentis in the Farther Rhine valley. The Lötschberg tunnel through the Bernese Alps, between Kandersteg and Goppenstein in the Lötschen valley, opens up a direct route from western and north-western Europe, through Bern, Thun, and Spiez to Brigue and the Simplon.

The new line from Martigny to Orsières may be regarded as the beginning of another international route to northern Italy, through Aosta and the Dora Baltea.

The Rhine is navigable from Strassburg to Basel, and provides an important route for the carriage of heavy commodities which demand low freights; by this waterway coal from the United Kingdom reaches Switzerland.

**Trade.**—The chief trade is with Germany, France, the United Kingdom, and Italy; the imports are worth nearly one and a half times the exports. Notwithstanding the disadvantage of its internal situation, Switzerland does a large trade with the United Kingdom, of which 67 per cent. consists of exports. A large trade is also carried on with America. Most of the food of the country is imported, as are also the

raw materials of its manufactures, raw silk, cotton and wool, coal, and useful metals and minerals of all kinds. Manufactured goods, especially silks and cottons, watches and clocks, machinery, and elaborated food products, especially chocolate, cheese, and condensed milk, together furnish 85 per cent. of the exports.

### AUSTRIA-HUNGARY.

Austria-Hungary includes two great states, differing widely both in physical and ethnic characters. The Austrian Empire is made up of the Bohemian and Moravian plateau, north of the Danube; Galicia and Bukovina, on the northern foreland of the Karpathians; the various provinces of the eastern Alps, south of it; Austria Proper, occupying the valley of the Danube between the Inn and the Leitha; and the coast-lands of Istria and Dalmatia on the Adriatic. Hungary consists of the plain of Hungary, surrounded by the Karpathians, and Kroatia, by which access is had to the Adriatic. The mountainous region of Bosnia-Herzegovina, which is part of the Balkan Peninsula, was annexed by Austria in 1908.

### AUSTRIA.

**Bohemia, Silesia, and Moravia.**—Bohemia is a plateau, bordered by the mountains of the Bohemian Forest (Böhmerwald), the Ore Mountains (Erzgebirge), and the Sudetes Mountains. It is drained to the north by the Moldau, the chief tributary of the Elbe, which rises in the Sudetes Mountains. The climate is extreme, with cold winters and hot summers. The rainfall is small except in the mountains, and is

heaviest in summer. One-third of the surface is forested, and more than one-half is under cultivation. Wheat, oats, rye, barley, flax, hops, and sugar-beet are the principal crops. Minerals are abundant in the mountains, including silver, lead, copper, tin, and iron. Coal is widely distributed, and extensively worked in the north. The State has recently purchased the radium pitchblende mines at Joachimstal, in the north-west of Bohemia, thereby acquiring practically a monopoly of the world's known supplies of radium. A little gold is obtained from the Roudny mines near Prag, and silver at Příbram.

Industrially, Bohemia is one of the most active regions of Europe. Sugar, beer, and brandy are manufactured, Pilsener beer having a world-wide reputation. Paper, porcelain, glass of fine quality, iron and steel goods of all kinds, woollens, linens, and other textiles are also made, and dyeing and calico-printing are carried to great perfection. Prag (Prague), the capital, on the Moldau, is the most important manufacturing town, and the centre of routes which radiate in all directions. Reichenberg, in the north, is the centre of the woollen manufacture. Brünn, the capital of Moravia, manufactures machinery and woollens, and is engaged in dyeing.

Galicia and Bukovina occupy the northern slopes and foreland of the Karpathians. The climate is drier and more extreme than that of Bohemia. The Karpathian area is forested. The crops cultivated are rye, barley, wheat, and oats. Sheep are the chief live-stock. Zinc and coal are found near the confluence of the San and the Vistula, but the most valuable mineral product of Galicia are the petroleum deposits which

underlie extensive areas in the western part of the country, especially in the neighbourhood of Tustanowice and Drohobycz. Wieliczka, near Krakow, has long been famous for its salt-mines, which form a great underground town of many streets. Sugar and paper are the only important manufactures. Czernovitz, in Bukovina, is the centre of the latter.

**The Eastern Alpine Provinces and Austria Proper.**—The Alpine and Danubian provinces of the Austrian Empire consist of the valley of the Danube, between the Inn and the Leitha, the eastern Alps drained to the Danube, with the exception of the Engadine, and the valley of the Etsch (Adige) opening out to northern Italy. Wheat, rye, and other cereals are cultivated in the lower valleys of the Danube. In the Alps mountain pastures and forests replace agricultural land, except in the valleys. Those opening to the south and east are planted with the vine and mulberry. The agriculture of the Etsch valley approximates to that of northern Italy.

Minerals are abundant in the eastern portion of the eastern Alps. Iron is found in Eisenerz in Carinthia, lead at Bleiberg, mercury at Idria, and some lignite near Graz.

Manufactures of very varied kinds are carried on in and around Vienna, including shipbuilding for the Danube trade. Silk is manufactured in the south of Tirol and in Vorarlberg.

**The Dalmatian Coastal Region** is mountainous, and fringed by islands. Cereals are cultivated, as well as the vine and olive. About one-third of the surface is forested, and nearly one-half is pasture. Cattle-raising and fishing are important occupations. The

country possesses abundant water-power, of which, however, little use has yet been made. There are cement-factories at Spalato, the second seaport in Austria, and calcium carbide works at Sebenico, where the power is derived from the Kerka falls.

Trieste, the seaport of Austria, lies on the Adriatic, at the north of the Istrian peninsula.

Bosnia-Herzegovina is a forested, mountainous land, with deep, fertile valleys. Forests cover 50 per cent. of the area, and timber, especially oak, for which the country is famous, forms one of the most valuable exports. Hay, maize, wheat, oats, and potatoes are the chief crops. In the north of Bosnia large quantities of plums are grown, dried, and exported. Live-stock are reared. Coal, iron ore, manganese, and salt are mined.

## HUNGARY.

Hungary lies between 45° and 51° N., and is about equal to the British Isles in area. It is a vast grassy plain, surrounded by forest-clad mountains. In climate and products it somewhat resembles southern Manchuria in the same latitudes. It is crossed by the Danube and its tributaries, the Tisza (Theiss), with its whole course in Hungary and receiving the Maros from the Transylvanian Alps, and the Drave and Save, which border Kroatia and Slavonia. It consists of two plains, separated by the Bakony Forest and surrounded by the North Hungarian Ore Mountains in the north, the Karpathians in the north-east, the mountainous Transylvania in the south-east (Bihar Mountains and Transylvanian Alps), and the Highlands of Kroatia and Slavonia in the south-west.

The forests yield excellent timber. The grassy plains, or *pusztas*, support vast numbers of horses, cattle, and pigs. Many parts have been brought under cultivation, yielding rich crops of wheat, maize, barley, oats, rye, and potatoes. Sugar-beet and tobacco are also cultivated.

The mineral wealth of Hungary is very great. Gold and mercury are found in the Transylvanian Alps. The Karpathians are rich in iron, coal, silver, and lead.

Economically, Hungary is in a state of transition. Until recently it was a pastoral, lumbering, mining, and agricultural country, but at the present time manufactures are developing at a very rapid rate. The textile industries have made great progress, and many articles formerly imported (for example, agricultural implements from the United Kingdom) are now manufactured in the country. The electrical industry is also increasing in importance. Budapest mills flour, manufactures jute for flour-sacks, and also makes machinery, spirits, and transport material. At Pressburg, where very similar manufactures are carried on, there is a great dynamite-factory. Agram (Zagrab), the capital of Croatia, manufactures tobacco and leather. Chemicals are made at Ruszkato and Szolyva. Breweries and distilleries, flour-mills, and sugar-factories are widely distributed, and utilise many of the local agricultural products. From Fiume, the port of Hungary on the Adriatic and an important ship-building yard, flour is exported, the bulk of the unmilled grain, however, as well as large quantities of flour, being exported down the Danube. The dry air of Hungary is favourable to the manufacture of

excellent flour, much better than can be obtained from Hungarian wheat ground in Britain.

**Trade and Routes of Austria-Hungary.**—The staple exports of Austria-Hungary are timber from the mountains, wheat and flour, live-stock and animal products from the plain of Hungary, sugar, eggs, and manufactured goods. The imports are cotton and cotton goods, wool and woollens, coal, silk and silk manufactures, machinery, hemp and jute, coffee and tobacco.

The chief trade is with Germany, the United Kingdom, Italy, Russia, Switzerland, Romania, France, and the Balkan States.

The Danube is the great commercial artery of the country, across which it flows from north-west to south-east. It is navigable throughout its course within the empire, from which it issues through a narrow gorge or klissura, at the end of which a canal has been constructed to avoid the shallow rapids at the Iron Gates, where Orsova is built.

Vienna and Budapest are the chief centres of communication, and the Oriental Express route passes through both, following the valley of the Danube to Belgrade. From Vienna lines run north to Berlin through Prag, north-east into Russia by Krakow, and south-west by the Semmering Pass to the longitudinal valleys of the eastern Alps and the Adriatic. From Budapest lines pass across the Karpathians to Russia, across the Transylvanian Alps to Romania, and to the Adriatic at Fiume. At Innsbruck the Brenner Pass route to Italy diverges down the Etsch (Adige) valley, and the Vorarlberg route runs westward to Switzerland. From Schwarzach a railway now passes

through Badgastein and Villach to Trieste, the leading port of Austria and an important shipbuilding centre, thus providing an outlet for the trade of western Austria and south-eastern Germany. A steamship service has been established between Trieste and Canada, which will divert much of the Austrian traffic which formerly passed northwards through Germany.

### SERVIA.

Servia is a mountainous land south of the Save and Danube, drained by the Morava. It abounds in oak and beech forests, in which feed vast herds of swine. Cattle, sheep, and goats are also reared. Maize is grown for food, wheat for export, while vines are cultivated in the north-east. Plum-orchards are found in all parts, whose fruit forms prunes when dried, and brandy (*slivovitsa*) when fermented and distilled. The mineral wealth is great, but little use is made of it at present through lack of good roads and capital. Belgrade, on the Danube, at the mouth of the Save, is the capital and chief town, from which the railway follows the Morava to Nish, where it branches to Sofia and Constantinople in the east and to Salonica in the south. Domestic manufactures are still by far the most important, especially carpet-weaving at Pirot.

### BULGARIA.

Bulgaria lies to the east of Servia, and includes the Balkan Mountains, a limestone foreland to the north, and the Tunja and upper Maritza valleys (Eastern Rumelia) to the south. The deeply incised valleys of the Balkan foreland are fertile strips across a bare

plateau, which ends in a more fruitful belt of loess near the Danube. Wheat, maize, and barley are the chief crops. In the southern valleys there are many fragrant rose-gardens, whose flowers are used to make the famous attar of roses. Vineyards are numerous, tobacco cultivation is of some consequence, and plum-orchards are common in the north. Silkworms are reared. The mountains are forested, oak and beech predominating. Sheep, goats, and cattle are the most important live-stock.

The industrial development of Bulgaria is beginning. Coal (at Pernik, and near Trevna in the Balkans) and iron are the chief minerals worked. Modern factories exist in Sofia, the capital, woollen-mills at Gabrovo, and cotton-mills at Varna. From Sofia, the railway runs through Plevna and Tirnovo to Varna, a port on the Black Sea, with branches running northwards to the river-ports at Vidin and Rustchuk, and to Dobritch. Another line passes eastwards on the southern side of the Balkans to Philippopolis, and branches through Zagora to Burgas on the Black Sea, and down the Maritza valley to Adrianople. A line runs south-west from Sofia through Kustendil.

### ROMANIA, OR RUMANIA.

Romania lies between the Transylvanian Alps and the Danube, between the Eastern Karpethians and the Pruth, and includes the delta of the Danube and the Dobruja to the south. It is a well-forested mountain land, sinking to a fertile loess-covered foreland, across which the rivers cut their way in deep valleys. One-fifth of the land is forested and two fifths cultivated. Wheat and maize are by far the most important crops,

but barley and other cereals, grapes and plums, damsons and other fruits, beetroot, colza, and flax are also grown. Live-stock are numerous, and, as in Servia, pigs are exceptionally abundant. Antimony, copper, mica, sulphur, coal, and iron are found along the base of the Transylvanian Alps, but these minerals have not yet been exploited. Lignite is being worked at Schela, and salt at Craiova. Rumania is one of the principal petroleum-producing countries of the world; about 95 per cent. of the Rumanian output is obtained in the district of Prahova. The oil serves as fuel to a large extent in the local factories and on the railways, but the bulk of the production is conveyed by rail or pipe-line to Constantza for export.

Most of the factories in the country utilise the local products—namely, the distilleries, flour-mills, sugar and tobacco factories, oil-refineries, and paper-mills; but within recent years marked progress has taken place in the textile industries, although only the coarser kinds of goods are at present manufactured. Cement-factories have been established at Galatz and Cernavoda.

The chief trade is with Austria-Hungary, Belgium, the German Empire, the United Kingdom, and Italy; but while the value of the imports from Germany is four times that of the exports to that country, the value of the exports to Belgium is twelve times that of the imports; a very large proportion of the wheat is sent to the grain markets at Antwerp and Rotterdam, where it is mixed with Hungarian, Russian, and Bulgarian grain and sold as Danubian wheat. Cereals are by far the most important export; petroleum, timber, vegetables, and fruit coming next. Manufac-

tured goods of all kinds, colonial produce, and chemicals are the chief imports

Bukarest (or Bucuresci), the capital, close to the border of the Walachian and Moldavian plains, is the commercial and industrial centre, from which railways radiate. Lines cross the mountains to Hungary, the Danube to Constantza (Kustenje), a port on the Black Sea, and through Moldavia, of which Yassy (Iasi) is the chief town, collecting agricultural produce. Timber is floated down the Danube from the forested mountains. The grain is carried by lighters to Braila, Galatz, and to Sulina on the delta, where it is loaded for export.

#### MONTENEGRO.

Montenegro is a limestone highland region, forming part of the Karst area, lying between Herzegovina and the North Albanian Alps, interspersed with fertile valleys and having a short coast-line on the Adriatic.

Maize, tobacco, the vine, and olive are grown, but the agriculture is of a primitive kind. Live-stock are reared, and some fishing is carried on in Lake Scutari. A narrow-gauge railway connects Vir Pazar with Antivari on the Adriatic.

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## CHAPTER XX.

### THE GERMAN EMPIRE.

THE German Empire, popularly but incorrectly called Germany, lies between the northern slopes of the Alps on the south and the Baltic Sea on the north, and between the mouth of the Ems on the west and the

Niemen on the east. Lying between  $47\frac{1}{2}^{\circ}$  and  $55^{\circ}$  N., it is farther from the equator than any part of the southern hemisphere considered except Patagonia, and corresponds in latitude with Newfoundland in the northern hemisphere.

**Configuration.**—Physically, Germany consists of two very different regions, the Southern Highlands and the Northern Plains.

The Southern Highlands are formed of rounded hills covered with thick forests, except on the highest summits, and well-developed valleys, whose lower slopes and bottoms are cultivated. The upper Danube and its tributaries flow across a plateau to the south of which rise the Alps, and to the north the German Juras. The middle Rhine passes down a very fertile plain, twenty to twenty-five miles wide, between the Black Forest (Schwarzwald) and the Vosges, before it enters a gorge in the Lower Rhine Highlands. The Neckar and Main, its chief tributaries on the right bank, drain the escarpments and gently sloping regions of the German Juras. Another lower fertile region lies between the hills of Thuringia and the Harz. These hills are drained to the Weser in the west, and to the Saale and Elbe in the east.

The Rhine, shortly after reaching the lowlands, makes a great delta, which forms part of Holland and Belgium. To the east of the delta a belt of lowland extends to Russia and permits easy communication, which is interrupted here and there by marshes. It is bounded on the north by a band of higher ground, rugged, covered with pine-woods, and dotted with lakes and lakelets, due to morainic accumulations, and known as the Baltic Heights. The estuaries of the

Weser and Elbe form convenient openings from this lowland to the North Sea. The Oder, a German river, and the Vistula and Niemen, whose lower courses are within the empire, flow to the Baltic between morainic heights. They all enter lagoons (*Haffen*), separated from the sea by sandspits.

The Baltic Sea, the Central Lowlands, the Main, and the Danube valleys all facilitate communication between east and west. The other rivers permit ready transport between north and south across the lowlands, but only the Rhine acts as a route uniting the north and the margin of the Alps.

**Climate.**—The German Empire extends as far north as England, and as far south as the Loire in France. It is, however, farther removed from the influence of the ocean, and has therefore hotter summers, colder winters, and less rain than the corresponding regions of England and France. The range of temperature increases and the rainfall diminishes from west to east and from north to south. The mean annual temperature varies little from north to south, as the gradual rise of the land from the Baltic to the Alps compensates for the lower latitude. The climatic conditions are comparatively uniform, the main divisions being the colder, drier east; the milder, wetter west; and the south-west, with its very dry autumns.

**Plants and Animals.**—Less than one-tenth of Germany is unproductive, one-quarter is covered with forests, one-sixth with meadows, and nearly one-half consists of arable land. Three-quarters of the forests are pine-woods, which clothe the upper slopes of the Southern Highlands, and are also found in parts of the Northern

Lowlands; the remainder is composed of mixed woods, wherein beech predominates, on the lower slopes of the hills. The forests of Germany are regarded as a valuable national asset, and they are under highly skilled supervision.

The eastern half of the plain, especially Prussia, and the Bavarian plateau are noted for horses. Sheep are kept on the undulating heights south of the Baltic. In Saxony and Silesia sheep are relatively few in number, but their wool is famous for its quality. Cattle are most numerous in the meadows of the highlands and the western plains. The eastern plains support pigs and poultry of all kinds, geese being a specialty of Pomerania. The lowlands south of the Baltic Heights, the lower part of the Danube plateau, and the Rhine plains are the most important agricultural regions. Of cereals, rye is the most extensively cultivated, and is still the staple cereal food in many parts of Germany, especially in the east. Except in the extreme north-west, more than 10 per cent. of the lowlands are cultivated with rye. Wheat is chiefly grown in the valleys, and oats on the hillsides of the highlands. Some buckwheat is grown in the sandy soils of the north, and some maize in the extreme south. The sugar-beet is extensively grown on the plains. Flax is cultivated in the east of the Baltic Heights, and to a smaller extent in upper Silesia. Hops are grown on the Bavarian plateau and in the upper Rhine district. The vine is widely cultivated, but does best on the hilly slopes above the Rhine and its chief tributaries, which face the sun.

Both the North and Baltic Seas are well stocked with edible fish. Herring-fishing and cod-fishing are

important occupations. Fresh-water fish are numerous in the rivers and lakes.

**Minerals.**—Germany is very rich in minerals, more particularly in coal and iron. The chief coalfields are in Silesia, Saxony, the Ruhr valley of Westphalia, and the valley of the Saar. Over 75 per cent. of the German iron ore production is obtained in Westphalia, the Rhine Province, and Lorraine. The Harz Mountains produce silver, lead, and copper. The Ore Mountains (Erzgebirge) yield tin. Silesia and west Prussia are noted for zinc. Salt is mined at Stassfurt and Halle, in Prussia, and in Saxony. Many varieties of excellent building-stone are found, as well as clay suitable for bricks, pottery, and porcelain.

**Manufactures.**—More people are now engaged in manufacture than in agriculture. The modern factory system has developed greatly since the formation of the empire. The chief industrial regions are Rhenish Prussia, Westphalia, Saxony, Silesia, and the district round Berlin. All kinds of steel and iron goods are manufactured at the three great coalfields—Westphalia, the Rhine Province, and Saxony. Within recent years there has been a remarkable development of the electrical industries, in which Germany holds the leading place. The total number of spindles in the textile industries shows a steady increase since the beginning of the century. The principal seat of the woollen industry is in Saxony and Silesia, in the vicinity of Görlitz, Chemnitz, and Liegnitz, and in the Rhine Province. Silesia is also the centre of the linen industry, for which much locally grown flax is used. The cotton industry of Germany is not localised to the same extent as in the United Kingdom,

but the principal centres are Prussia, Saxony, Alsace, and Bavaria. In 1881 the cotton spindles numbered five millions; to-day they exceed ten millions, the towns with the largest number being Mülhausen, Augsburg, Grönau, and Werdau. The water-power of the Southern Highlands is increasingly used. In many cases it is converted into electricity, which is employed for driving machinery, illumination, traction, and an increasing number of industrial and domestic purposes.

Beer is largely made in all parts of Germany. The distilling of alcohol, especially from potatoes, is an important industry along the lower Rhine and the lower Elbe. The extraction of sugar from beet-root is of great consequence in Silesia and in the lowlands between the Elbe and the Weser, where the chief centres are Halle, Magdeburg, and Hamburg. Germany has become the most important manufacturer of chemicals of all kinds, an achievement due to the careful training of experts.

Germany takes a foremost place in what may be called the higher industries, such as the making of scientific and musical instruments. Leipzig ranks with Paris and London as the great book-market of the world.

**Inland Trade and Trade-Routes.**—The main trade-routes of Germany either follow the rivers, which flow from south-east to north-west, or pass east and west across the Northern Lowlands and the valleys of the Main and the upper Danube. The large towns are all on navigable waterways.

Ulm, at the head of navigation on the Danube, lies where the Orient Express route reaches that river

from the Neckar and the Rhine. Munich, on the Isar, which flows across the Bavarian plateau, is an important railway centre and the focus of the traffic passing across the Alps by the Brenner Pass. It is an important industrial centre, especially for the manufacture of railway material and of artistic furniture and china. Regensburg (Ratisbon) is built where the route from the south by the Brenner Pass and the Inn crosses the Danube to the north, passing through Nürnberg (Nuremberg), on the Rednitz, famous for its toys. A canal joins the Danube system by the Altmühl to the Main. Karlsruhe, in Baden, and Darmstadt, in Hesse, are growing industrial towns on the Rhine plain. Karlsruhe has been transformed into a river-port by the construction of a short branch waterway to the Rhine. Strassburg is an important canal and railway centre near the junction of the Rhine and the canals leading to France. Mannheim, a large river-port at the confluence of the Neckar and the Rhine, manufactures steel and iron goods and chemicals.

Frankfurt-am-Main is a commercial centre, the meeting-place of many important routes—e.g. the east and west routes by the Main valley, and the north and south routes by the Rhine, or on either side of the Vogelsberg to the Weser. Among its more important manufactures are jewellery, electrical apparatus, and motor vehicles.

Cöln (Cologne) is the most important commercial centre in the north-west, where the great routes from Paris and Brussels cross the Rhine on their way to the sea. Its woollen and cotton and chocolate manufactures, and distilling and engineering works, are

important. To the west, Aachen (Aix-la-Chapelle) is a woollen centre. To the north, round the Ruhr coal-field, many important towns have grown up. Barmen-Elberfeld produces principally textiles and chemicals; Mulheim, Remscheid, and Solingen all kinds of iron and steel manufactures; Essen armour-plate and armaments (at Krupp's works). Dortmund, Bochum, and Gelsenkirchen have iron and steel works, breweries, distilleries, and furniture-works. Crefeld, to the west of the Rhine, has important silk-mills. Düsseldorf is the centre of extensive iron and steel and chemical works, and also contains the largest glass bottle factory in the world. Düsseldorf, Duisburg-Ruhrort, and Cöln are the chief river-ports, Duisburg-Ruhrort having the largest inland harbour on the Continent.

Cassel, on the Fulda, manufacturing machinery and railway material and pianos; Hannover (Hanover), on the Leine, an important railway and canal centre, producing cotton goods, chemicals, and machinery; and the great seaport of Bremen, are the chief towns, in the basin of the Weser.

Plauen, Zwickau, and Chemnitz are the chief towns on the Saxony coalfields which manufacture textiles. Freiberg is a mining centre. Dresden, on the Elbe, and Leipzig, on the Elster, where two tributaries join it, are both important meeting-places of many routes, and have rapidly growing industrial quarters, in which machinery and leather manufactures are carried on. Leipzig is also famous for its textiles, paper-making, and printing. Its fur and book markets control the trade in these articles in Central Europe. Dresden china is made at Meissen, on the Elbe.

There are numerous little manufactories in the

valleys of Thuringia. Gotha is famous for its maps, Jena for its glass and scientific instruments. Halle, on the Saale, is an important transport centre, manufacturing sugar and salt. Magdeburg, on the Elbe, is another transport centre, in whose rapidly growing industrial quarters sugar, machinery, pottery, and paper are manufactured.

Breslau, the commercial centre of Silesia, has sugar and cotton factories. Posen, on the Warta, the chief tributary of the Oder, is an important agricultural centre, with machine-shops. Stettin, at the mouth of the Oder and at the head of the Stettiner Haff, is the seaport of Berlin. The largest vessels, however, stop at Swinemünde, on the Baltic.

Danzig, at the mouth of the Vistula, and Königsberg, at the mouth of the Pregel, are the chief ports of West and East Prussia. Rostock, on the Warnow, Kiel, and Memel are also important Baltic ports.

Hamburg, together with its outport, Altona, is the most important port not merely in Germany but in continental Europe. The fine estuary of the Elbe permits great sea-going vessels to reach the city. Hamburg has a magnificent hinderland in the productive central portion of the German plain and in the industrial region of Saxony, and even in upper Silesia, and is the outlet for two-thirds of North Germany. Bremen, at the head of the Weser estuary, is one of the principal cotton markets on the Continent, but does not yet possess water-communication with such an extensive hinderland; though the projected great canal to join the Elbe to the Rhine will give it a greater share of the eastern traffic. The extensive system of German waterways, both natural and arti-

ficial, is an important factor in the commercial and industrial development of the country. The imperial government is fully alive to the value of cheap transport, and has already expended large sums of money in improving and constructing waterways. This is rendered less difficult by the fact that most of the German railways are State-owned.

The Rhine is navigable to a point 27 miles above Mannheim for boats up to 1600 tonnage, and from Strassburg to Basel for small barges. The traffic entering and leaving the river-port of Duisburg-Ruhrort in 1905 amounted to 20,000,000 tons. Canals connect the Rhine with the Rhone, with the Marne, and through the canalised Main with the Danube. The Saar has been canalised, and provides an outlet for an important coal and iron district. The Dortmund-Ems Canal traverses the Westphalian mineral region; coal supplies 75 per cent. of the down-stream traffic, and about half the up-stream freights consists of imported ore. The transport facilities of this region are being further extended by continuing the canal from Herne to join the Rhine below Ruhrort. From Bevergeren, on the Dortmund-Ems Canal, a waterway is being built to the Weser and Hannover, thus providing an east-to-west route. On the Ems, Weser, and Elbe the 600-ton barge is typical of the largest class. The Weser is navigable for small barges as far as Cassel, on its tributary the Fulda; and steps are now being taken to provide a deep waterway between Bremen and Hameln. The Elbe is navigable beyond the Saxony frontier, and carries much of the traffic of the lignite district of Bohemia. The Elbe-Trave Canal, from Lauenburg to the seaboard, passes

through Lübeck, and has greatly increased the trade of that port. The peninsula of Schleswig-Holstein is cut by the Kaiser Wilhelm Canal, which joins Kiel, on the Baltic, to Brunsbüttel, near the mouth of the Elbe. The Oder is navigable as far as Kosel, and connects the maritime port of Stettin with the Silesian coalfields. Berlin and its neighbourhood are connected with the Oder by the Finow and the Oder-Spree canals, and also with the Elbe by the Teltow and Havel canals. From Königsberg and Danzig there is a water-route, through the forest and agricultural districts of the Vistula, to Kustrin, on the Oder.

German ports are favourably situated for oversea trade with Scandinavia, the British Islands, and the seaboard countries of the world. The produce of the Rhine, however, has either to be shipped from the ports of Belgium and the Netherlands, especially Antwerp, Rotterdam, and Amsterdam, or else to be sent by a roundabout way to Bremen and Hamburg, the two German ports on the North Sea. In spite of this disadvantage, which will eventually be removed by building a ship-canal from the Rhine to the German seaboard, the German oceanic trade is increasing by leaps and bounds.

**Foreign Trade.**—Its central position in the heart of Europe gives the German Empire a great advantage in trading with countries bordering its frontier, and even beyond, as the railways, except in Russia, are of one gauge, and goods can be transported without break of bulk. An illustration of the importance of this is afforded by the growth of German trade with Italy since the opening of the St Gotthard tunnel

permitted direct railway communication. The upper navigable waters of the Danube, the international waterway from Eastern Europe, are within the empire, and canals join the Rhine to the Rhone and to the Marne in the west.

Manufactured goods of all kinds form the chief exports and also the chief imports. The most important are textiles, base metals and metal manufactures, chemicals, machinery, and leather goods, of which more are exported than imported, and food-substances, raw materials, precious metals, and manufactures, of which more are imported than exported. Electrical goods form 3 per cent. of the total exports. Among the imported food-stuffs, cacao has assumed a prominent place within recent years, the consumption per head of the population and the imports, mainly from West Africa, having been doubled during the decade ending 1910. Although much German agricultural produce is exported, between three and four times as much is imported. Sugar is by far the most important commodity exported to the United Kingdom; and cotton, woollen, and wood manufactures, iron and steel goods, cereals, glass, and eggs rank next. The most important articles imported from the United Kingdom are woollen and cotton goods, machinery, coal, iron, yarns, and herrings.

The trade with the United States is now the most valuable; the value of the imports thence, chiefly cereals and raw cotton, is twice the exports. Only second in importance is the trade with the United Kingdom; the value of the exports thither is about one and a third times that of the imports. During the period 1906-1910,  $13\frac{1}{2}$  per cent. of the German

exports were sent to the United Kingdom; British produce furnished 8 per cent. of the total imports into Germany. Next in order is the trade with Russia (the imports being two and a half times the exports in value), Austria-Hungary, France, Belgium, Switzerland (the value of the exports being double that of the imports), Italy, and the Netherlands. Imports from Central and South America, the West Indies, and British India are more valuable than the exports. With the other countries of Asia the imports and exports are almost of equal value.

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## CHAPTER XXI.

### THE LOW COUNTRIES.

#### BELGIUM.

BELGIUM, like Germany, consists of a forested region in the south—the Ardennes—bordered by a northern plain. The temperature is equable, the rainfall moderate and uniform.

**Products.**—The Campine, or eastern part of the plain, is marshy and infertile, except where it has been reclaimed. Flanders, the western part of the plain, is fertile. In parts it lies below the level of the sea, which, as in Holland, has to be kept out by dikes. The land thus reclaimed forms moist, rich meadows. The plains of Flanders, Brabant, and Hainault are cultivated with cereals, pulses, flax, tobacco, hops, chicory, and sugar-beet. Sheep are fed on the grasslands of the Ardennes. The horses of Belgium are famous.

**Minerals and Manufactures.**—Belgium is rich in minerals, more especially coal and iron. The coal-fields lie on the Meuse and Sambre, round Liège and Charleroi, and in the region west of Mons. East of Liège are large zinc-mines.

The chief manufactures of Belgium are machinery, textiles, chemicals, and glass. Flanders has long been one of the most important manufacturing districts of Europe, especially famous for its linens, which are made from locally-grown flax, and bleached in the waters of the Lys, which possess properties peculiarly suitable for that purpose. Courtrai and Ghent (Gand) manufacture cotton and woollen goods. Fine lace is made at Mechlin (Malines). In the east, wool is manufactured at Verviers. The metallurgical industries, of which the making of machinery is the most important, are carried on in the valley of the Meuse, especially round Liège, where the manufacture of glass is also of importance. The cement industry is important in the Hainault district.

**Trade, Towns, and Routes.**—The exports of Belgium are manufactured goods, iron, steel, machinery, textiles, sugar, chemicals, glass, and also coal and zinc. The imports are cereals, raw materials for manufacture, minerals, wool, timber, oil-seeds, coffee, rubber, and manufactured goods.

The largest trade is with Germany, France, Britain, and the Netherlands, the exports and imports being comparable in value. The imports from the United States, on the other hand, far exceed the exports to that country.

A very large transport trade takes place across Belgium between Germany and countries overseas,

mainly through Verviers, Liège, and Antwerp (Anvers), the chief port on the estuary of the Schelde. Antwerp has a large trade with the North Sea ports, and with New York, South America, and West Africa, to which vessels run regularly. It is connected by canal and rail with the industrial region of Belgium, for which it is the outlet. Brussels, Bruges, and Ghent are important inland harbours. With the completion of the Willebroeck Canal, the port of Brussels will be opened to sea-going vessels. A line of railway runs south from Antwerp through Brussels and Namur to Luxemburg and Alsace-Lorraine, Switzerland, and Italy by the St Gotthard tunnel. From Brussels a line passes south-westward by Mons to Paris, westward to Ostend (Ostende), the packet-station for Dover, through Bruges, Ghent, and eastward by Liège and Cöln (Cologne) for North Germany by lines across the plain, or for South Germany by the Rhine.

#### THE NETHERLANDS.

**Configuration and Climate.**—The Netherlands, or Holland, consists of the delta of the Rhine, together with the marshes between the Rhine and the Ems. Much of the country has been reclaimed from the sea by means of dikes and powerful pumps. This land, which is saturated with water, forms rich meadows known as *polders*. Canals intersect the land in all directions, and serve to drain the water-logged land, and as means of communication.\* So important are the dikes and canals for the very existence of Holland, that a special department of State is charged with the protection of the dikes and the regulation of the

canals. Reclamation is still going on, and it is proposed to drain most of the shallow Zuider Zee, a great inland gulf running far into the heart of the country, which would add a million of acres to the Netherlands, at a cost of about £27,000,000.

**Plant and Animal Products.**—The rich meadow-lands are admirably suited for grazing, and cattle-raising and dairy-farming are the chief occupations. The principal agricultural crops are cereals, chiefly rye and oats, potatoes, root-crops, beet, chicory, flax, and tobacco. The cultivation of bulbs has long been a notable occupation. The North Sea fisheries, and more particularly the herring-fisheries, occupy numerous Dutch trawlers and fishing-boats; while net-making is an old and important industry. Oysters are cultivated round the coast. Minerals are unimportant with the exception of clay, which is made into earthenware (at Delft), bricks, tiles, and glass. Within recent years coal has been successfully worked in the Limburg district and in the extreme south-east of the country. Hitherto peat has always been the national fuel of Holland, and the removal of the peat in several districts, formerly barren, has exposed a layer of fertile soil which has proved suitable for the cultivation of wheat and potatoes.

**Manufactures.**—Holland is deficient in coal, iron, and other minerals, and also in water-power. This has militated against the development of metallurgical and textile industries, but with the aid of imported coal some textile manufactures are carried on, mainly in the province of Overijssel and North Brabant. Considerable use is made of wind-power. The manufacture of margarine has become of great import-

ance. Cacao, beer, gin, and various liqueurs are also made.

**Trade, Towns, and Routes.**—Much of the trade of Holland is an entrepôt trade. Cereals, flour, iron, copper, steel, and textiles figure as the most valuable items both in the list of imports and in the list of exports. They are not of Dutch origin, and are imported only to be re-exported. Among exports of Dutch origin, home or colonial, the principal are rice, sugar, margarine, vegetables, and coffee. The chief imports for home use are wool, coal, rice, coffee, sugar, and hides.

Most of the trade of Holland is with Germany (for which it serves both as an outlet and an inlet through the ports of Rotterdam and Amsterdam), the British Isles, Belgium, the United States, and the Dutch East Indies, all of which are important customers. Canals and railways connect all parts of Holland. The Rhine is the most important waterway. Rotterdam, on the right bank of its distributary the Lek, is the chief port. Amsterdam, the other great port of Holland, is joined to the North Sea by two canals, one running due west to IJmuiden, the other northward to the Helder. Important passenger routes run from west to east, one from Flushing (Vlissingen) to Venlo, on the frontier, opposite to the Ruhr valley, and the other from the Hook of Holland (Hoek van Holland) to Rotterdam, whence lines diverge in all directions.

## CHAPTER XXII.

## THE SCANDINAVIAN COUNTRIES.

## DENMARK.

DENMARK consists of the peninsula of Jutland and of the islands between it and Sweden, of which the largest are Fyen, Zealand (Sjælland), Falster, Lolland, and the more distant Bornholm. Except in the latter, the land is low, gently undulating, and covered with meadows. One-fifth of the land is covered with peat-mosses, and one-third is under cultivation, mainly on the Baltic islands. Oats, barley, rye, beet, and potatoes are the chief crops. Dairy, pig, and poultry farming is the most important occupation, and provides over two-thirds of the exports in the form of pork, butter, eggs, and lard. The fisheries are of no great importance. Cereals, provisions, textiles, hardware, colonial produce, and coal are the principal imports. Britain is the best customer of Denmark; next come Germany, United States, Russia, and Sweden. Germany is the most important source of the imports, next the United Kingdom, and third the United States.

Denmark has progressed greatly since the organisation of a thorough system of technical education, and of collecting and disposing of the produce of the many dairy-farms. It also affords an excellent example of what may be accomplished in a country with very small farms whose occupiers have security of tenure.

Copenhagen (Kjöbenhavn), the capital, is the chief

port on the Sound, by which most vessels enter the Baltic. Its harbour is free, and it does a large entrepôt trade. Aarhus exports much of the produce of Jutland. Routes pass westward from Copenhagen to Korsør for Kiel, to Esbjerg in Jutland for Harwich, and southward to Gjedser for Warnemünde near Rostock in Prussia. On the shorter ferries whole trains are carried by the steamers.

### NORWAY.

**Configuration and Climate.**—Norway consists of the western slope of the lofty Scandinavian plateau, lying between  $58^{\circ}$  and  $71^{\circ}$  N. Its western or seaboard edge is deeply cut by innumerable fiords, fringed by islands, forming a breakwater within which calm waters are found. The lower slopes of the plateau are covered with pine-forests. The agricultural land lies in the south-east, the best round Kristiania and Mjösen. Most of the towns are built on the coast, either of the mainland or of the islands. The climate is mild and wet on the south coasts, but cold on the plateaus and in the north.

**Productions, Occupations, and Towns.**—The wealth of Norway consists in its seas and its forests. On the coast, which is the most thickly populated part of the country, every family is dependent, more or less, upon the fishing or shipping industry. Crews are sent to the North Sea fisheries, where cod, mackerel, herring, and bristlings are caught, and to the seal and whale fisheries, not only in north polar waters, but also off the coast of Africa and of South Georgia. Fish-curing is an important industry, and the tinning of provisions, especially spring herring, is steadily de-

veloping, chiefly in Stavanger and Haugesund. The forests supply turpentine and timber (much of the latter being converted into pulp for the manufacture of paper), and matches. Printing and packing papers are the leading kinds of paper made, especially at Drammen and Skien. Shipbuilding is carried on all round the coast, the chief yards being at Kristiania, Bergen, and Trondhjem; the building of motor-boats for use in the fishing industry is growing in importance. The Norwegians are among the great shippers of the world. Considerable developments are taking place in the mining industry, largely owing to the introduction of electrical smelting. The iron ores of north Norway are treated at Sydvaranger and Salanger; iron deposits also occur near Tromsø Sound, and in the south at Kragerø and Arendal. There are extensive iron-foundries and smelting-works at Kristiania, Bergen, and Stavanger. There are important copper-smelting works at Sulitjelma, Meldalen, and Elmore. Silver is found at Kongsberg, and nickel near Haugesund. Saltpetre is worked at Rukan. The abundant water-supply of Norway is proving a very valuable industrial asset. At Odda, on the Hardanger Fiord, water-power is being utilised in the manufacture of calcium cyanamide, for which Norway possesses abundant supplies of limestone.

Kristiania, the capital and chief port, is in the centre of the agricultural and manufacturing district of the south-east. Several condensed-milk factories are situated in this area, and large quantities of butter are shipped from Kristiania, Bergen, and Trondhjem.

**Trade and Routes.**—Timber and wooden goods, paper,

fish and fish products, tinned provisions, condensed milk, butter, and ice are the chief exports. Rye and rye-flour (from Germany and Russia) and coal (from the United Kingdom) are by far the most important imports; then come machinery, especially electrical machines, barley, sugar, coffee, and flour. The United Kingdom is still the best customer, but in recent years Germany has furnished an increasing proportion of the imports.

Railways are not much developed. A line runs from Kristiania to Bergen, and another, by the copper-mining district of Röros, to Trondhjem. From Kristiania, Trondhjem, and Narvik railways pass to Sweden.

#### SWEDEN.

**Configuration and Climate.**—Sweden occupies the eastern slope of the Scandinavian plateau. It differs from its western neighbour in many respects. The proportion of plain is much larger; the extremes of temperature are more marked; the rainfall is low, and comes chiefly in summer.

**Products and Manufactures.**—The southern plains are cultivated with oats, barley, wheat, potatoes, and sugar-beet. Dairy-farming is increasing in importance. Two-fifths of the surface is forest, which is utilised in the same way as in Norway. Minerals are abundant, more particularly very pure iron ores, copper (Falun), lead and silver (Sala), and zinc (Ammeberg). The iron-mines are in the extreme north, at Gellivara, and near Dannemora, to the north of Lake Mälär. The manufacture of steel and iron goods is the principal industry in the region between Lake Mälär and the Dal. Sugar and textiles are

manufactured at Stockholm, and textiles at Norrköping and Göteborg. Fishing is important round the skerry-bordered coast.

**Trade, Towns, and Routes.**—Timber alone accounts for one-half of the exports. Live animals and dairy produce, metals, machinery, minerals, paper and paper manufactures rank next. Coal, metal goods and machinery, raw and manufactured textile materials, colonial produce, and cereals head the imports. The best customer of Sweden is the United Kingdom, which takes 35 per cent. of its exports, mainly in the form of timber and butter. Germany (21 per cent.), Denmark, and France rank next. The imports are chiefly from Germany (35 per cent.) and the United Kingdom (25 per cent.), followed by Denmark, Russia, and the Low Countries.

The most important port is Göteborg (in German, Gothenburg), on the Göta. Stockholm, on Lake Mälär, the capital, ranks as the second. From Stockholm a railway runs north by Upsala, with a branch to Trondhjem in Norway, to Gellivara, whence it is continued to Narvik, in Norway, on the North Sea, which permits the exportation of iron ore all the year round. Lines run west to Kristiania and Göteborg, and south to Malmö and Karlskrona, through the manufacturing town of Norrköping. The routes to Germany are from Trelleborg to the island of Rügen, or from Malmö to Copenhagen and through Denmark (q.v.).

## CHAPTER XXIII.

## THE UNITED STATES OF AMERICA.

THE United States lie between  $25^{\circ}$  and  $49^{\circ}$  N.—that is, between the latitudes of the Canary Islands and the English Channel on the opposite side of the Atlantic, or of Argentina in South America. The area of the United States, excluding Alaska, is over 3,000,000 square miles, about that of the Australian Commonwealth, or a little less than the mainland of Europe. They are bounded on the east by the Atlantic, on the west by the Pacific, on the north by Canada, and on the south by Mexico and the gulf of that name.

**Configuration.**—Physically the United States consist of the Appalachian Highlands in the east, the Great Plains in the centre, and the lofty Western Mountains. The eastern Appalachian Highlands are fringed by a coastal plain, which is broadest in the south. In the north, where the region has been submerged, the drowned valleys form excellent harbours, such as Chesapeake Bay and the Delaware and Hudson estuaries. Transversely, the Appalachian Highlands are broken only by the Hudson valley, which leads by Lake Champlain to the St Lawrence, and by the Mohawk valley to the Great Lakes. These lakes form the northern boundary of the eastern part of the great Central Plains, and are a waterway into the heart of the country comparable to that formed by the Gulf of Mexico in the south. The great Central Plains stretch

across the continent from the Appalachians to the foot of the Western Mountains, rising gradually to the base of the easternmost range, the Rocky Mountains. The Mississippi flows almost due south across the centre of the plains, receiving mighty tributaries, the Ohio from the east, and the Missouri, Platte, Arkansas, and Red Rivers from the west. The Western Mountains consist of a broad plateau, with numerous ranges rising above it, whose eastern parapet is formed by the Rocky Mountains, and western boundary by the Cascades and the Sierra Nevada. West of the latter is the Sacramento valley, bounded on the west by the Coast Range. The coast ranges follow the west coast throughout the United States territory, and are terminated in the north by the Strait of Juan de Fuca, which opens into Puget Sound, the drowned northern end of the valley between the Cascades and the coastal range, a continuation of the Sacramento valley in the south. Two rivers break through the coastal ranges—the Columbia in the north, and the Sacramento in the south.

**Climate.**—On the west coast the temperature is equable, but elsewhere it is one of extremes. The summer temperatures are specially high, but it must be remembered that the most northern part of the United States is nearer the equator than the most southern part of the British Isles. The warm summers rather than the cold winters determine the nature of the plants which can be cultivated. In the extreme south the inflowing winds bring summer rains, which fall over the whole of the Central Plains. Depressions pass over the plains in winter, drawing moist air from the Gulf of Mexico, and causing

winter rains. Thus, east of a line drawn from the west of the Gulf of Mexico to Lake Michigan, the precipitation is considerable at all seasons. California has a Mediterranean climate of dry summers and cool, moist winters.

**Economic Divisions.**—In the north the economic divisions are the same as in southern Canada. In the west the slopes of the Western Mountains are densely forested, but the arable plains of the Columbia and Sacramento Rivers are wider than those of British Columbia. On the Plains the ranching area is greater, owing to the extension eastward of the region of low rainfall. The forest belt extends along the borders of the Great Lakes, and is continued over the whole of the Eastern Highlands to the Atlantic coastal plain.

In the extreme south the economic conditions are of an entirely different type. The Gulf coastal plain produces cotton, rice, and, farther north, tobacco and maize. Maize is grown in every state of the Union except in the extreme north. It is most important between the Ohio and the lower Missouri and in eastern Nebraska and Kansas. Tobacco can be cultivated as far north as the Connecticut valley. For export it is grown principally in Kentucky, Virginia, and North Carolina, and in the adjacent states. Wheat is cultivated most extensively between the Appalachians and 100° W. to the north of 36° N., and in the Sacramento and Oregon valleys. In California the vine comes to perfection on the hillslopes, particularly in the south, where all Mediterranean fruits are cultivated, especially lemons, which now form one of the principal sources of wealth in the state. In the drier states of the west,

irrigation is leading to a considerable development of agriculture.

**Minerals.**—The mineral regions described in southern Canada extend across the frontier into the United States. Gold is found in small quantities in the east, and is very abundant in the Western Mountains, especially in Colorado and California and in Alaska. Silver is very important, and is mined in Colorado, Montana, Utah, and many other states. Mercury is obtained from New Almaden in California; copper from Montana, Arizona, and the north of Michigan; zinc from Kansas and Missouri. In addition to building stone and clay, the most useful minerals are oil, coal, and iron, all of which are found in large quantities. The oil regions are in Oklahoma and Illinois, and in central and southern California, where the recent discoveries of large quantities of petroleum, now yielding about one-third of the total output of the United States, and the development of cheap electric power from the streams of the Sierras, are compensating for the absence of coal in the southern Pacific states. The most important coalfield is in north-east Pennsylvania, where fine anthracite is mined. Coal, however, is very widely distributed all along the western margin of the Appalachians, round the lower Missouri, and between this region and the Ohio. Iron is most abundant in the States of Minnesota, Michigan, and Alabama. The bulk of the ore from the Lake Superior region is sent to the Lake Erie ports (Ashtabula, Cleveland, and Conneaut) to be smelted with coal and oil fuel from the eastern coalfields, especially at Pittsburg (Penn.) and at Cleveland (O.), the latter of which receives abundant limestone to act as a flux

from neighbouring islands in Lake Erie. The ore from the Appalachian region, between the Delaware and the Gulf of Mexico, is smelted at Birmingham (Ala.), where coal and limestone are also found.

**Manufactures.**—The vast stores of coal, iron, and oil, and the abundant water-power, naturally led to great manufacturing activity as soon as population became sufficiently dense in the east to supply the necessary hands and markets. The United States is now the most important manufacturing country in the world, with an output twice that of the United Kingdom, most of it being consumed at home.

The manufactures of the United States may be classified under four heads: those concerned with the elaboration of forest products; those concerned with the manufacture of pastoral and agricultural produce; the manufacture of textiles and articles of clothing; and the metallurgical industries, including transport materials.

Lumbering is an important industry round all the Great Lakes, but the chief supplies of timber are now obtained from the north-western mountains of Oregon and Washington, and from the southern states, where the resources of hardwood are of great economic value. Where water-power is available, saw-milling, coopering, and the manufacture of wood-pulp, paper, and furniture spring up at suitable centres in the forest regions. Most of the towns of the Great Lakes are thus engaged, especially Detroit.

The chief flour-milling centre is Minneapolis, situated near the Falls of St Anthony, and with easy access to the great wheat-lands of the Dakotas and Minnesota. Other important milling centres are New

York, Buffalo, Milwaukee, and Kansas City. Maize, used as a food for man and beast, is also made into starch and glucose, which is fermented and distilled. The ranching area has given rise to an enormous trade in preserved meat. Cattle from the western ranches and hogs fattened on maize on the eastern plains are brought to the meat-packing cities to be slaughtered and canned. Chicago, Kansas, and Omaha are the largest centres for cattle-slaughtering, and Chicago is also the centre of the pork-packing trade. It is an interesting fact, economically, that the centres of this trade have moved far to the west within the last forty years, owing to the rapid extension of settlement and agriculture west of the Mississippi, and the consequent pushing westward of ranching. In the seventies Cincinnati, often called Porkopolis, occupied the same position in the meat-packing trade as Chicago does to-day. Fruit-canning is now an important industry, especially in California. Tobacco is manufactured in Virginia, West Virginia, and North Carolina; Louisville, in Kentucky, and Richmond, Virginia, being among the chief tobacco markets of the world. It is also manufactured at St Louis. West Indian sugar is refined at Philadelphia, while the output of beet-sugar has increased threefold during the first decade of the century, the chief areas of cultivation being in Michigan, California, and Colorado.

The textile industries have developed in the long-settled and thickly peopled north-eastern states, which possess a moist climate, water-power, and easy access to the coalfields of the north and the cotton plantations of the south and to a large market. Manchester (New Hampshire), Lowell and Lawrence (Mass.), all

on the Merrimac; New Bedford and Fall River, the most important centre, in southern Massachusetts; and Providence, in Rhode Island, are famous for cottons. A chain of towns, engaged in textile and other manufactures, has grown up along the Appalachian 'fall-line,' where the rivers form rapids and falls in passing from the highlands to the coastal plain. Since the opening of the century remarkable developments have taken place in the manufacture of local cotton in the cotton-growing states, especially in North and South Carolina, Georgia, and Alabama, with their good supply of labour and abundant store of power derived from the adjoining coalfields or from the streams. The mills of the south-eastern states now use over 50 per cent. of the raw cotton consumed in the United States. Cotton-seed crushing has become an important industry in recent years, and by utilising the by-products has made a very substantial addition to the value of the cotton-crop. Woollen manufactures are growing in importance, and the demand for woollen goods is great owing to the cold winters. The chief centre is Philadelphia (Pa.), but woollen goods are also made at Lawrence and Lowell in Massachusetts, Providence (R.I.), New York City, and other towns of the coastal states from Pennsylvania northward. The woollens are manufactured into ready-made clothes at New York, Philadelphia, Chicago, Boston, and all the great cities. An extensive silk industry is carried on in New Jersey (Paterson), Connecticut, Pennsylvania, and New York State, the raw material being imported, chiefly from Japan, although the climatic conditions of the southern states are well suited to the cultivation of the mulberry. Pennsyl-

vania is the largest producer of leather in the United States; many New England towns are noted for their machine-made boots and shoes (Lynn, Mass.), and for hardware of all kinds (Hartford, Conn.). Glass manufacture is an important industry in the Pittsburg district.

The metallurgical industries are carried on in the coal and iron regions. The great iron-manufacturing centres are Pittsburg, in eastern Pennsylvania; Chicago, in Illinois; and Birmingham, in Alabama. The making of machinery is carried on in all the great cities, especially Philadelphia, Chicago, New York, Pittsburg, and Gary. Chicago, Buffalo, Detroit, and Worcester (Mass.) make railway plant. Detroit is the largest centre of the motor-car industry. Philadelphia is noted for its locomotives, and here and at San Francisco steel shipbuilding is developing; the naval dockyards are situated at Norfolk (Va.).

The United States is only at the beginning of its career as a manufacturing nation. Its enormous command of raw material, of fuels, such as coal and oil, and of water-power, and its great and growing population, fit it to take the leading place in the future. The industrial development of the United States, however, should not be compared with that of one of the states of Europe, but with the whole. The great advantage of the American United States is that the highest intelligence is brought into its industrial life, which is unhampered by the undue conservatism of the Old World. New and improved methods are promptly adopted; machinery and processes are never allowed to become antiquated; and though labour is more costly per head, it is more intelligent and

energetic, and consequently, in the long-run, cheaper, than in the older manufacturing countries of the world, although it may not be so persistent nor so thorough.

**Internal Communication.**—There are over 25,000 miles of navigable waterways in the United States, the most important of which are the Great Lakes and the Mississippi. Nearly 14,000 miles of river are navigable in the Mississippi basin, and the tonnage transported on the Ohio system is over 15,000,000 tons per annum. Only the lower courses of the Appalachian rivers across the coastal plain are important, except in the case of the Hudson, which crosses the Appalachian barrier from north to south, is navigable for ocean steamers for 100 miles, and carries over 18,000,000 tons per annum. On the Pacific coast the Columbia is navigable for 500 miles, and the other large rivers for 100 to 150 miles.

The traffic on the Great Lakes is vast, and continually increasing. The annual tonnage passing through the Soo Canal, between Huron and Superior, is nearly 35,000,000 tons, and is almost double that of the Suez Canal. Of this traffic 50 per cent. consists of iron ore, chiefly from the ports of Duluth, Two Harbours, and Superior. The remainder of the traffic consists chiefly of grain and flour, lumber, and coal. Duluth, Superior, Chicago, and Milwaukee are the leading wheat ports; and the first-named is also the chief timber port. Coal is sent westward from the Lake Erie ports, as well as the textiles, machinery, and other manufactured goods of the eastern states. The Erie Canal avoids the Niagara Falls, and connects Lakes Erie and Ontario with the Hudson by the Mohawk valley.

The coasting traffic is also very great, and is carried on only by vessels flying the United States flag.

The railway system of the United States is very highly developed, especially in the east and north-east of the central plain, radiating from Boston, New York, Philadelphia, Buffalo, Cincinnati, Chicago, St Louis, and many other centres, with ramifications too complex for summary here. From Chicago, the greatest railway and transport centre in the world, four lines cross the continent. The first in order of construction was the Union Pacific, which goes by Omaha and the Great Salt Lake to San Francisco, with a branch line which runs north-west to Portland in Oregon. The Great Northern runs parallel to the Canadian frontier, at no great distance south of it, to Tacoma on Puget Sound. The North Pacific also runs parallel, but farther south, by Bismarck in Missouri, and Helena in Montana, to Portland. The Topeka and Santa Fé line goes by New Mexico and Arizona to southern California. A line connects San Francisco with Portland, Tacoma, and other Pacific cities. A fifth trans-continental line, the Southern Pacific, starts from San Francisco, and skirts the Mexican frontier and Gulf to New Orleans, from which radiates a network of lines to every part, through Cairo and St Louis to Chicago, through Louisville to Cleveland, and through Atlanta to New York and Boston.

**Internal and Foreign Trade.**—Until the closing decade of the nineteenth century, the exports of the United States were mainly the produce of its forests, farms, plantations, and ranches, swollen at times by considerable quantities of gold and silver. These are still the most important, but no longer the sole exports.

Raw cotton ranks first in value, followed by cereals, especially wheat and maize. Tinned meats and other products of the ranches, and cheese from the east, where dairy-farming is largely carried on, live-stock, leather, hides, timber, minerals, and oils are all important.

The closing years of the nineteenth century were marked by a remarkable development of the export trade in manufactured articles, more especially iron. In 1885 the exports of iron and steel were worth only half as much as the imports. In 1890 they had risen in value to five-eighths; in 1895 they had reached half as much again as the imports, and in 1910 the extraordinary figure of six and a half times as much. Iron and steel goods now rank second in value on the list of American exports. The imports are manufactured goods, more particularly textiles, sugar, coffee, silk, hides, india-rubber, and other raw materials. With the development of the last twenty years the imports have changed in character and relative value. Raw materials for manufacture amounted in 1911 to one-third the total value of the imports, as against one-fifth in 1891; the imports of manufactured articles show a slightly decreasing proportion during the same period.

The chief trade of the United States is with Europe, which takes 67 per cent. of the exports, and sends 51 per cent. of the imports. The leading customer is the United Kingdom, which takes one-third of the domestic exports of the States, while supplying about one-fifth of the imports. Germany is the next best customer, accounting for one-seventh of the exports from the United States, and sending about one-ninth

of the imports. Within recent years there has been a remarkable development in the trade with Canada; in 1911 the value of the exports to Canada was seven times the value in 1891, and the imports from Canada about three times. France, the Low Countries, and Italy are next on the list of United States customers. In the Mexican trade of the United States the imports and exports nearly balance; while from the South American states, with the very important exception of Argentina, the imports considerably exceed the exports, particularly in the case of Brazil, from which much cotton and coffee are obtained. The imports to the United States also exceed the exports from it in the case of India, China, Japan, and the East Indies. The exports to Australia, on the other hand, far exceed the imports in value, and are rapidly growing.

The United States are now in regular communication with the United Kingdom, Germany, the Low Countries, France, and Italy, and no effort is spared to render the trans-Atlantic service as rapid as possible. New York is the chief terminus of the cross-Atlantic traffic, but regular lines of steamers also run to and from Portland (Maine), Boston, Philadelphia, Baltimore, Savannah and other South Atlantic ports, New Orleans, Galveston, and other Gulf ports.

A considerable change has taken place in the relative importance of these cities as exporting centres. Forty years ago New York had 46 per cent. of this trade, and New Orleans 15 per cent. Now New York has only  $37\frac{1}{2}$  per cent., while Boston, Baltimore, and Philadelphia have profited; New Orleans has now only  $8\frac{1}{2}$  per cent., while Galveston has steadily increased in importance with the development of Texas, and has

now  $10\frac{3}{4}$  per cent. of the export trade. Boston, Philadelphia, and Baltimore have from  $4\frac{1}{2}$  to 5 per cent., the two former ports having grown with the increased export of manufactured goods, while Philadelphia and Baltimore are nearer the tobacco and maize growing districts than New York, although access is not so easy to the central plain.

Taking into account both export and import trade, the following are the percentages of the leading ports, in which the predominance of New York, the chief importing centre, is much more marked than when exports alone are considered:—New York, 46·2 per cent.; New Orleans, 6·2 per cent.; Galveston, 6·1 per cent.; Boston, 6 per cent.; Philadelphia, 5 per cent.; Baltimore, 3·6 per cent.; and San Francisco, 2·6 per cent.

In 1901 the first through steamer sailed for Chicago, which is now practically an ocean port, from Manchester, which is also naturally an inland town.

The trans-Pacific service is less important at present than the trans-Atlantic, but regular lines of steamers sail from San Francisco to Japan, China, the Philippines, and Australasia. The export trade of San Francisco, however, is still chiefly with Europe, and a relatively large proportion of the trade with Britain is carried on by sailing-ships. The opening of the Panamá Canal will give a great impetus to the trade between the Atlantic and Gulf ports and those on the Pacific seaboard.

# APPENDIX.

## TRADE STATISTICS, MONEY, WEIGHTS, AND MEASURES.

### I.—BRITISH POSSESSIONS.

#### AFRICA.

#### BRITISH SOUTH AFRICA.

Imports (excluding Inter-state Trade).	1906-10.	1911.	Exports.	1906 10.	1911.
	£1,000.	£1,000		£1,000.	£1,000.
Total.....	29,748	39,565	Total.....	48,953	58,917
Cotton Manu- factures.....	2,144	3,116	Gold Bullion *..	30,991	37,626
Apparel and Slops.....	1,826	2,810	Diamonds.....	7,576	8,283
Machines and Machinery....	2,325	2,032	Wool.....	3,234	3,900
Haberdashery and Millinery	1,572	1,803*	Ostrich Feathers	1,864	2,253
Boots and Shoes	1,005	1,178	Hides and Skins	956	1,212
Iron and Steel..	1,015	1,319	Coal, bunker and cargo.....	728	1,088
Wheat and Flour.....	1,507	1,167	Angora Hair....	1,058	918
Wood and Tim- ber.....	560	1,055	Copper. ....	527	643
Woollen Manu- factures.....	630	906	Bark.....	156	289
Stationery.....	447	611	Specie.....	284	93
Drugs and Chemicals.....	467	585			
Sugar.....	499	476			
Meat, fresh and frozen.....	461	269			
Gold Specie.....	1,171	953			

\* Including produce (£22,000) sent for shipment from Belgian Congo and Portuguese East Africa.

BRITISH SOUTH AFRICA—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1906-10.	1911.	1906-10.	1911.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	18,278	23,250	45,135	53,479
Germany.....	2,505	3,553	1,393	1,586
United States.....	2,359	3,052	246	509
Australia.....	2,076	1,978	61	48
British India.....	822*	951 *	189	29

## UNION OF SOUTH AFRICA.

## TOTAL TRADE.

	Imports.			
	1901-5.		1906-9.	
	£1,000. Grand Total.	£1,000. Bullion and Specie.	£1,000. Grand Total.	£1,000. Bullion and Specie.
Cape Province.....	26,951	1,174	15,580	134
Natal.....	12,314	912	7,981	292
Orange Free State.....	2,371	—	3,535	163
Transvaal.....	13,587	1,187	17,325	1,672

	Exports.			
	1901-5.		1906-9.	
	£1,000. Grand Total.	£1,000. Bullion and Specie.	£1,000. Grand Total.	£1,000. Bullion and Specie.
Cape Province.....	23,232	12,146	43,443	28,083
Natal.....	3,075	1,421	3,343	1,283
Orange Free State.....	981	—	3,359	236
Transvaal.....	12,194	11,304	31,732	28,065

UNION OF SOUTH AFRICA—*Continued.*

Imports.	1909-11.	Exports.	1909-11.
	£1,000.		£1,000.
Total .....	35,279	Total .....	53,570
Machines and Machinery	3,119	Gold Bullion.....	32,536
Cotton Manufactures.....	2,671	Diamonds.....	7,710
Apparel and Slops .....	2,338	Ostrich Feathers.....	2,205
Haberdashery and Millinery.....	1,763	Wool .....	1,273
Leather and Leather Goods.....	1,435	Coal.....	968
Wheat, Flour, and Meal,	1,340	Angora Hair.....	894
Iron and Steel .....	1,222	Maize.....	586
Railway Materials.....	1,151	Copper.....	528
Books, Printed Matter,		Hides and Skins.....	406
Paper, and Stationery..	954	Bark.....	234
Timber.....	852	Tin Ore.....	170
Woollen Manufactures...	781	Specie.....	67
Coffee.....	552		
Electrical Materials.....	548		
Drugs and Chemicals.....	503		
Gold Specie.....	1,450		

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.	Exports.
	1909-11.	1909-11.
	£1,000.	£1,000.
United Kingdom .....	20,841	47,443
Germany.....	3,118	1,714
United States.....	2,607	422
Australia.....	2,031	58
Belgium.....	514	588
India.....	852	62

*Money.*—British.

*Weights and Measures.*—British. Old Dutch measures still in use. Liquid measure: 1 leaguer=128 imperial gallons. Capacity: 1 muid=3 bushels. 1 morgen=2.1 acres; 1000 Cape lineal feet=1033 British imperial feet.

**UNION OF SOUTH AFRICA.**  
**CAPE OF GOOD HOPE PROVINCE.**

Imports (including Goods in Transit to the Interior).	1901-5.	1906-9.	Exports by Sea.	1901-5.	1906-9.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	26,951	15,580	Total.....	23,232	43,443
Cotton Manu- factures.....	1,372	1,524	Gold Bullion (including pro- duce brought overland for shipment)...	11,082	28,964
Apparel and Slops.....	1,117	1,243	Diamonds (in- cluding pro- duce brought overland for shipment).....	5,802	7,349
Wheat and Flour.....	1,261	976	Wool.....	1,783	2,397
Haberdashery and Millinery	1,761	820	Ostrich Feathers	964	1,762
Machinery.....	1,043	648	Angora Hair....	621	796
Hardware, Cut- lery, and Iron- mongery....	1,445	616	Skins, goat and sheep.....	434	645
Woollen Manu- factures..	445	452	Copper Ore.....	478	477
Stationery.....	506	419	Gold Specie.....	1,052	127
Sugar.....	659	411			
Coffee.....	316	333			
Meat, preserved and frozen....	1,234	282			
Wood and Tim- ber.....	795	265			
Railway and Tramway Materials.....	1,437	222			
Gold Specie.....	1,117	121			

## NATAL.

Imports by Sea.	1901-5.*	1906-9.	Exports.	1901-5.	1906-9.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	15,892	7,981	Total.....	2,875	3,343
Machinery, Railway and Tramway Plant.....	1,666	864	Gold Bullion (including pro- duce of other provinces shipped from Natal).....	1,145	1,113
Haberdashery and Millinery	763	631	Wool.....	298	685
Iron, Iron- mongery, Hardware, and Cutlery...	894	510	Coal, cargo and bunker.....	379	612
Apparel and Slops.....	535	387	Maize.....	36	189
Frozen Meat....	1,182	323	Hides and Skins	37	156
Leather, manu- factured.....	576	267	Bark of all kinds.....	82	138
Cotton Manu- factures.....	162	230			
Flour, Meal, and Bran.....	342	201			
Liquors.....	468	195			
Rice.....	155	191			
Gold Specie.....	1,087	285			

\* Including Inter-state Imports by Sea.

## NYASALAND PROTECTORATE.

Imports.	1901-2 to 1905-6.	1906-7 to 1910-11.	Exports.	1901-2 to 1905-6.	1906-7 to 1910-11.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	198	197	Total.....	48	129
Soft Goods.....	80	100	Raw Cotton..	5	28
Provisions and Alcohol.....	28	22	Tobacco.....	1	20
Hardware.....	24	14	Coffee.....	20	13
Arms and Am- munition.....	3	2	Ivory.....	3	6
			Rubber.....	3	5

**NYASALAND PROTECTORATE—Continued.**

**DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.**

	Imports.		Exports.	
	1902-3.	1906-7 to 1910-11.	1902-3.	1906-7 to 1910-11.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	126	142	28	85
British Possessions.....	12	15	1	18
Germany and German East Africa	9	19	4	9

**BRITISH EAST AFRICA PROTECTORATE.**

Imports (excluding Materials for Construction of Uganda Railway).	1901-2 to 1905-6.	1906-7 to 1910-11.	Exports.	1901-2 to 1905-6.	1906-7 to 1910-11.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	498	825	Total.....	179	575
Cotton Piece Goods.....	162 *	221	Hides, Horns, &c.—Uganda Produce.....	36 *	124
Provisions and Liquors.....	63	99	Do.—British East African Produce.....	17	56
Grain and Flour	54	82	Raw Cotton—Uganda Produce.....	—	71.
Building Materials and Timber.....	24	38	Do.—British East African Produce.....	—	4
Hardware, Glassware, &c.....	27	35	Grain.....	25	58
Agricultural Implements...	4	23	Rubber—Uganda Produce...	7	38
Beads, Copper and Brass Ware	19 *	22	Do.—British East African Produce.....	13	19
Tobacco.....	10	19	Gold Bullion.....	—	26
			Copra.....	10	22

\* Average for three years ending 1905-6.

BRITISH EAST AFRICA PROTECTORATE—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-2.	1906-7 to 1910-11.	1901-2.	1906-7 to 1910-11.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	115	512	14	161
India .....	138	188	4	21
Germany.....	47	73	4	90

*Money.*—Currency is based on Indian rupee (15=£1).

## UGANDA PROTECTORATE.

Imports.	1902-3 to 1905-6.	1906-7 to 1910-11.	Exports.	1902-3 to 1905-6.	1906-7 to 1910-11.
	£1,000.	£1,000.		£1,000.	£1,000.
Total Merchandise.....	133	372	Total Merchandise.....	65	196
Textiles and Apparel.....	61	133	Raw Cotton.....	—	66
Provisions and Liquors.....	15	36	Hides and Skins	20	43
Ivory.....	6	32	Ivory.....	20	40
Hardware.....	1	12	Rubber.....	3	12
Machinery.....	1	11	Chillies.....	5	8
Rubber.....	2	9			
Corrugated Iron	4	6			
Bullion and Specie.....	5	55			

## UGANDA PROTECTORATE—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1902-3.	1907-8 to 1911-12.	1902-3.	1907-8 to 1911-12.
	£1,000.	£1,000.	£1,000.	£1,000.
Total.....	63	475	32	202
United Kingdom.....	28	176	—	92
British Possessions.....	8	108	—	161
Germany.....	7	37	—	7
United States.....	9	53	—	—

*Money.*—Silver rupees, of which 15=£1.

## SOMALILAND PROTECTORATE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	338	280	Total.....	298	226
Textiles.....	97	77	Hides and Skins	145	137
Rice.....	94	74	Live-stock.....	27	32
Dates.....	44	27	Ghee.....	7	14
Jowaree.....	17	19	Gums and		
Specie.....	38	20	Raisins.....	7	7
			Bullion and		
			Specie.....	77	13

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1902.	1906-10.	1902.	1906.
	£1,000.	£1,000.	£1,000.	£1,000.
British Possessions.....	335	262	328	363
Foreign Countries.....	20	16	20	8

*Money.*—The rupee has the same value as in India.

## COLONY AND PROTECTORATE OF SOUTHERN NIGERIA.

Imports.	1901-5.*	1906-10.	Exports.	1901-5.*	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	2,451	4,538	Total.....	2,623	4,047
Cotton Yarn and Manufactures	695	1,044	Palm Kernels...	1,160	1,709
Spirits.....	233	334	Palm Oil.....	754	1,332
Iron, Steel, Hardware, Implements, and Machinery.....	94	250	Rubber.....	137	214
Railway and Bridge Materials.....	37	224	Cotton and Cotton Seed.....	8	81
Tobacco.....	99	173	Cacao.....	13	60
Building and Roofing Materials.....	65	160	Tin.....	—	45
Coopers' Stores	96	142	Specie.....	154	143
Provisions.....	58	105			
Specie, mainly Silver.....	241	461			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.*	1906-10.	1901.*	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	2,644	3,382	1,085	2,019
Germany.....	216	478	900	1,696
British Possessions.....	41	210	72	75

*Money, Weights, and Measures.*—British.

\* For purposes of comparison the statistics of the Colony of Southern Nigeria (Lagos) and the Protectorate of Southern Nigeria for the period 1901-5 have been combined.

## NORTHERN NIGERIA PROTECTORATE.

	1901-4.	1907-10.
	£1,000.	£1,000.
Total Imports.....	272	980
Total Exports.....	101	327

## GAMBIA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	302	454	Total.....	281	445
Cotton Goods...	60	90	Ground Nuts...	165	298
Rice.....	15	48	Rubber.....	4	2
Kola Nuts.....	24	44			
Tobacco.....	6	8			
Spirits....	4	6			

## GOLD COAST.

Imports.	1901-5.	1906-10	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	1,897	2,458	Total.....	1,060	2,503
Cotton Yarn and Manufactures.....	358	496	Gold, Gold Dust, and Concentrates	268	995
Machinery.....	151	180	Cacao.....	122	603
Provisions and Rice.....	176	164	Rubber.....	215	292
Spirits and Wine.....	151	153	Palm Oil.....	155	131
Wearing Apparel.....	62	81	Lumber.....	53	128
Hardware and Cutlery.....	50	63	Palm Kernels...	99	112
Tobacco.....	39	55	Kola Nuts.....	47	82
Specie.....	224	514	Specie.....	80	138

GOLD COAST—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	1,321	1,822	254	1,813
Germany.....	192	251	144	355
British Possessions.....	82	85	35	161

*Money.*—British currency. American, French, and Spanish gold coins are also used at fixed values.

## SIERRA LEONE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	659	966	Total.....	435	903
Cotton Manu- factures.....	173	256	Palm Kernels...	208	448
Provisions and Liquors.....	71	84	Kola Nuts.....	69	135
Tobacco.....	32	53	Coal.....	14	51
Hardware and Cutlery.....	55	45	Palm Oil.....	15	48
Coal and Patent Fuel.....	19	32	Ginger.....	13	16
Haberdashery...	27	19	Rubber.....	19	15
Apparel.....	19	16	Specie, mainly Silver.....	72	141
Specie.....	47	148			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	412	703	88	211
Germany.....	61	109	118	379
British Possessions.....	11	31	46	132

## MAURITIUS.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Rupees.	1,000 Rupees.		1,000 Rupees.	1,000 Rupees.
Total.....	32,938	31,738	Total.....	35,860	37,387
Rice.....	7,009	7,507	Sugar.....	31,719	33,878
Other Grain, Pulse, and Flour.....	2,616	2,247	Aloe Fibre.....	583	678
Coal.....	2,014	1,999	Molasses.....	422	438
Cotton Manu- factures.....	1,380	1,395	Coco-nut Oil....	132	120
Sulphate of Ammonia.....	861	1,057	Rice.....	131	100
Machinery and Millwork.....	1,589	997	Rum.....	46	42
Bullion and Specie.....	1,275	1,850	Vanilla....	57	41
			Bullion and Specie.....	1,763	1,196

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Rupees.	1,000 Rupees.	1,000 Rupees.	1,000 Rupees.
India.....	13,637	13,830	16,678	23,274
Other British Possessions.....	2,482	2,699	8,109	7,762
United Kingdom.....	8,796	8,485	3,233	5,150
Foreign Countries.....	6,109	6,735	1,295	1,199

*Money.*—All accounts are kept in Indian rupees, of which 15 = £1.

*Weights and Measures.*—Metric.

## ZANZIBAR.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	937	1,016	Total.....	1,127	1,013
Piece Goods.....	299	223	Cloves.....	221	520
Rice.....	133	171	Piece Goods.....	257	158
Ivory.....	74	55	Copra and Chi-		
Groceries.....	45	39	kichi .....	122	141
Sugar.....	22	29	Ivory.....	80	61
Ghee.....	22	23	Grain.....	49	44
Petroleum.....	27	22	Hides and Skins	33	12
Rubber.....	31	9	Rubber.....	32	10
Bullion and			Bullion and		
Specie.....	109	87	Specie.....	109	65

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
British India.....	401	396	131	195
German East Africa.....	224	119	406	190
United Kingdom.....	107	153	83	99
British East Africa.....	82	63	129	98
France.....	17	8	124	152
Germany.....	63	44	45	105

*Money.*—The Indian rupee is current.

*Weights.*—1 *masla* of cloves = 35 lb. avoirdupois.

## AMERICA.

## CANADA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Dollars.	1,000 Dollars.		1,000 Dollars.	1,000 Dollars.
Total .....	234,000	325,000	Total .....	210,000	261,000
Iron and Steel			Wheat .....	15,196	38,963
Manufactures...	36,977	50,792	Wheat Flour.	4,938	8,316
Coal and Coke....	16,661	25,351	Lumber .....	27,877	33,879
Wool and Manu- factures of .....	13,037	18,313	Cheese .....	21,916	22,264
Cotton Manufac- tures .....	7,812	12,929	Fisheries Pro- duce .....	11,707	13,848
Sugar and Syrups	7,750	10,495	Live - stock (chiefly		
Hides, Skins, and			Cattle) ...	13,037	12,253
Undressed Furs	7,070	9,186	Silver .....	2,049	9,774
Chemicals, Drugs,			Bacon .....	12,781	9,264
Dyes, and Medi- cines .....	5,889	8,758	Gold - bearing		
Bread Stuffs .....	6,481	8,226	Quartz, &c.	18,895	8,469
Fruits, fresh and			Hides, Skins, and Furs ...	4,166	6,589
dried .....	4,468	7,573	Copper .....	3,583	6,517
Cotton Wool or			Wood and		
Raw Cotton .....	5,582	7,271	Manufac- tures of .....	3,735	4,879
Lumber and			Fruits .....	3,273	4,636
Timber .....	4,163	5,572	Coal .....	4,780	4,463
Fancy Goods .....	2,600	5,105			
Silk and Manu- factures of .....	3,685	4,485			
Tea .....	3,590	4,325			
Paper and Manu- factures of .....	2,285	3,610			
Books and Printed Matter .....	2,103	3,437			
Leather and					
Manufactures of	1,712	3,386			
Flax, Hemp, Jute, and Manufac- tures of .....	1,605	3,229			

CANADA—*Continued.*

## CLASSES OF IMPORTS AND EXPORTS.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.
Total .....	234,000	325,000	210,000	261,000
Agricultural Produce .....	18,614	26,537	34,738	63,684
Animals and their Produce .....	14,442	18,659	62,325	56,251
Forest Produce .....	5,265	7,315	32,368	40,731
Mineral Produce .....	21,293	32,294	34,388	35,637
Manufactures .....	144,583	205,269	19,231	26,522
Fisheries Produce .....	1,322	1,826	11,707	13,848

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.
United States .....	129,225	181,921	67,919	85,215
Great Britain .....	54,540	78,807	106,927	123,641
France .....	6,383	8,575	1,414	2,043
British West Indies .....	2,754	5,937	2,209	2,770
Germany .....	8,999	6,922	1,354	1,581
Newfoundland .....	990	1,621	2,575	3,117
Australia .....	182	352	2,443	2,734

*Money.*—Dollar=100 cents=4s. 2d. nearly; £1=4·86 dollars.

*Weights and Measures.*—British, except that a hundredweight=100 lb., and a ton=2000 lb. avoirdupois, as in the United States.

## NEWFOUNDLAND AND LABRADOR.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	1,790	2,325	Total.....	2,012	2,412
Flour.....	303	376	Dried Cod-fish..	1,166	1,573
Textiles .....	199	183	Iron, Chrome		
Meat and Pork.	187	132	Ore, and Py-		
Hardware and			rites. ....	164	226
Machinery ....	138	147	Cod Oil .....	99	80
Coal.....	88	125	Lobsters, tinned	89	76
Sugar and			Seal Oil.....	79	73
Molasses .....	83	92	Herring s,		
Leather and			pickled and		
Leather Wares	60	74	frozen.....	72	69
Oils and Lard...	32	67	Seal Skins .....	68	64
Apparel.....	49	46	Copper and		
Cordage .....	45	46	Copper Ore....	86	55
Tea .....	34	35	Lumber .....	37	40
Kerosene .....	18	25	Whale Oil.....	45	35
Bullion and					
Specie.....	24	46			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
Canada .....	512	820	146	339
United States .....	429	811	182	241
United Kingdom.....	478	552	376	313
Brazil.....	—	—	432	401

*Money.*—The gold dollar=4s. 1½d.

## WEST INDIES.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
Total.....	7,000	8,473	6,187	7,696
Bahamas.....	306	349	203	202
Turk's and Caicos Islands.....	29	27	31	23
Jamaica.....	1,864	2,554	1,811	2,366
Windward Islands...	1,624	1,869	1,220	1,419
Leeward Islands.....	398	512	353	492
Trinidad and Tobago.....	2,757	3,162	2,568	3,193

## BARBADOS.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	966	1,231	Total.....	778	959
Textiles.....	160	202	Sugar.....	403	290
Flour.....	57	82	Molasses.....	144	264
Manures.....	68	81	Coal, Coke, and		
Wood and			Patent Fuel..	—	74
Timber.....	53	76	Raw Cotton.....	5	50
Coal, Coke, and			Gold Bullion....	24	34
Patent Fuel..	29	75			
Rice.....	61	62			
Meat, salted and					
pickled.....	44	51			
Fish.....	40	50			
Hardware and					
Metals.....	28	43			

BARBADOS—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	463	522	68	146
United States .....	375	406	555	121
British North America .....	80	125	135	327

## JAMAICA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total .....	1,864	2,554	Total.....	1,811	2,366
Cotton Manufac- tures .....	288	353	Bananas .....	736	1,063
Flour, Wheat .....	162	233	Logwood and Log wood		
Fish .....	157	182	Extract .....	139	179
Wood and Timber	64	123	Rum .....	114	173
Apparel and Slops	62	81	Sugar .....	133	137
Boots and Shoes...	56	79	Coffee .....	123	128
Machinery and Locomotives ....	46	71	Cacao .....	57	105
Haberdashery and Millinery .....	40	65	Pinento .....	95	87
Rice .....	45	59	Coco-nuts .....	45	56
Coal and Coke....	93	58	Oranges .....	70	54
Hardware and Cutlery .....	44	57	Specie (mainly Gold) .....	62	111
Specie .....	21	33			

## JAMAICA—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United States .....	733	1,122	1,273	1,372
United Kingdom .....	858	1,150	410	503
Canada .....	118	181	32	143

## TRINIDAD AND TOBAGO.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	2,757	3,162	Total.....	2,568	3,193
Apparel, Haberdashery, and Textile Manufactures.....	402	455	Cacao (domestic produce).....	907	1,220
Hardware and Machinery.....	218	226	Sugar.....	494	542
Flour.....	181	217	Balata Gum.....	122	192
Cacao.....	177	216	Asphalt.....	160	158
Balata Gum.....	133	191	Hides and Skins	94	108
Hides and Leather.....	153	169	Gold Bullion.....	89	77
Rice.....	117	121	Specie.....	10	40
Gold Bullion.....	95	74	Transshipment Trade (included in above statistics).....	453	677
Specie.....	45	96			

TRINIDAD AND TOBAGO—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	*1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United States .....	674	797	817	992
United Kingdom.....	920	973	706	672
Venezuela.....	600	776	343	278
British Possessions .....	214	320	81	338

*Money, Weights, and Measures.*—British throughout the West Indies ; in some of the islands American coins are current.

## BERMUDA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	577	435	Total.....	133	140
Provisions.....	35	27	Onions.....	58	43
Flour and Meal	27	22	Potatoes.....	28	29
Beer, Spirits,			Bulls, Lily.....	11	7
and Wine.....	39	21	Specie.....	18	31
Cotton Goods...	29	21			
Live-stock.....	31	20			
Butter and					
Cheese.....	23	20			
Apparel.....	20	20			
Specie.....	29	8			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United States .....	297	*228	91	128
United Kingdom.....	412	123	3	9
British Possessions.....	52	*81	4	5

*Money, Weights, and Measures.*—British.

## BRITISH GULANA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	1,543	1,706	Total.....	1,892	1,835
Textile Manu- factures.....	167	191	Sugar.....	1,173	1,121
Flour.....	163	178	Gold Bullion....	357	252
Manures.....	124	149	Rum.....	118	123
Machinery, Hardware, and Cutlery...	113	110	Balata Gum.....	51	97
Beef and Pork..	63	63	Rice.....	10	46
Haberdashery and Millinery	28	54	W o o d   a n d Timber.....	27	27
Oils.....	36	52	Molascuit.....	18	26
Fish, dried.....	54	49	Molasses.....	10	9
Beer and Spirits	29	43	Diamonds.....	16	7
Coal, Coke, and Patent Fuel...	27	34	Specie.....	13	47
Bullion and Specie.....	17	55			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.. . . .	703	898	752	789
United States.....	405	484	808	668
British North America. ....	84	132	50	226

*Money.*—Dollar = 4s. 2d. British coins also in circulation.

## BRITISH HONDURAS.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	323	527	Total.....	341	452
Wood and Timber.....	11	61	Mahogany.....	95	133
Cotton Goods...	46	60	Chicle Gum . . .	8	52
Chicle Gum.....	8	52	Bananas.....	28	27
Provisions.....	29	43	Logwood.....	55	24
Beef and Pork..	20	25	Coco-nuts.....	10	19
Flour.....	18	23	Bullion and Specie.....	64	11
Boots and Shoes	13	21			
Hardware and Cutlery.....	12	16			
Bullion and Specie.....	29	12			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United States .....	150	248	122	266
United Kingdom.....	77	127	131	90
Mexico.....	4	105	2	42

*Money.*—United States gold is the standard of currency; £1=4·86 dollars.

## ASIA.

## INDIA.

## PRIVATE MERCHANDISE.

Imports (Sea-borne Trade).	1901-2 to 1905-6.	1906-7 to 1910-11.	Exports (Sea-borne Trade).	1901-2 to 1905-6.	1906-7 to 1910-11.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	76,764	101,911	Total.....	99,854	122,399
Cotton Manu- factures.....	21,579	25,888	Raw Cotton...	12,311	17,992
Cotton Twist and Yarn.....	1,733	2,269	Rice.....	12,020	12,830
Cotton, raw.....	214	297	Jute.....	8,498	12,697
Sugar.....	4,195	7,141	Seeds.....	9,493	11,382
Iron and Steel...	3,829	5,953	Jute Manufac- tures.....	6,612	11,179
Machinery and Millwork.....	2,415	3,838	Hides and Skins	6,568	8,729
Railway Plant and Rolling Stock.....	1,012	3,795	Tea.....	5,518	7,290
Mineral Oils....	2,175	2,142	Opium.....	6,281	6,588
Hardware, Cut- lery, and Im- plements.....	1,424	1,981	Cotton Twist and Yarn....	6,520	6,318
Provisions.....	1,387	1,854	Wheat.....	6,040	5,713
Woollen Manu- factures.....	1,472	1,711	Lac.....	1,572	2,039
Apparel.....	1,324	1,679	Wool.....	979	1,641
Silk Manufac- tures.....	1,196	1,503	Cotton Manu- factures.....	1,135	1,335
Liquors.....	1,218	1,288	Bullion and Specie (on pri- vate account)	5,314	4,104
Raw Silk.....	453	586			
Bullion and Specie (on pri- vate account)	17,445	21,127			

## INDIA—Continued.

## DISTRIBUTION OF SEA-BORNE TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-2.	1906-7 to 1910-11.	1901-2.	1906-7 to 1910-11.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	35,037	51,601	20,247	30,451
Germany.....	2,025	3,361	6,775	12,373
United States.....	786	2,159	5,579	9,362
Belgium.....	2,009	3,356	3,145	5,843
France.....	918	1,217	5,919	8,011
Japan.....	474	1,562	4,635	6,564
China—Hong Kong.....	726	725	6,561	6,721
China—Treaty Ports.....	468	703	5,143	5,208
Straits Settlements.....	1,553	2,054	4,226	4,308

DISTRIBUTION OF OVERLAND TRADE WITH OTHER COUNTRIES  
(EXCLUDING TREASURE).

	Imports.		Exports.	
	1901-2.	1906-7 to 1910-11.	1901-2.	1906-7 to 1910-11.
	£1,000.	£1,000.	£1,000.	£1,000.
Total.....	4,600	5,165	4,017	4,194
Nepal.....	2,470	3,263	1,622	1,558
Shan States.....	614	1,332	781	1,368
Afghanistan.....	624	923	671	1,168
Dir, Swat, and Bajaur.....	373	528	653	679
Western China.....	290	171	395	413
North and South Siam.....	284	256	132	221
Tibet.....	184	208	113	143

*Money, Weights, and Measures.*—The Metric measures have been legalised, but are not used. The unit of measure is the maunde, which varies from 25 lb. in Madras and 28 lb. in Bombay to over 82 lb. in Bengal. Indian statistics are usually expressed in tens of rupees (Rx.); 1 rupee=16 annas=1s. 4d. 100,000 rupees is called a lac; 10,000,000 rupees is a crore.

## CEYLON.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	7,601	9,072	Total .....	6,731	9,145
Rice.....	2,349	2,826	Tea.....	3,687	4,931
Other Grain, Pulse, and Flour.....	305	363	Coco-nut Oil....	635	851
Coal and Coke..	729	814	Plumbago.....	531	604
Cotton Manufac- tures, Twist, and Yarn....	449	597	Copra.....	387	560
Manures.....	119	267	Rubber.....	12	529
Sugar.....	152	222	Coco-nuts.. . .	249	366
Tea-chests . . .	95	130	Cacao.....	160	202
Curry Stuffs....	110	115	Cinnamon. . .	159	184
Fish.....	116	114	Coir and Mann- factures .....	130	169
Bullion and Specie .....	599	643	Areca Nuts .....	97	156
			Bullion and Specie.....	184	59

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	2,058	2,294	3,344	4,460
India .....	4,221	4,648	626	472
United States .....	28	82	364	995
Australasia.....	259	305	490	692
Germany.....	127	214	353	669

*Money.*—1 rupee = 100 cents = 1s. 4d.

*Weights and Measures.*—British.

## STRAITS SETTLEMENTS.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	32,341	39,296	Total.....	27,463	34,895
Tin and Tin Ore.....	6,817	8,486	Tin.....	6,812	9,085
Rice.....	3,041	4,075	Rice.....	2,721	4,020
Cotton Piece Goods.....	1,450	1,679	Gums (mainly rubber).....	1,262	2,231
Opium.....	1,132	1,323	Copra.....	642	1,223
Copra.....	612	1,153	Opium.....	1,153	1,074
Fish.....	696	1,009	Pepper.....	1,022	971
Pepper.....	881	875	Sago and Tapioca.....	650	924
Coal.....	622	813	Gambier.....	738	640
Tobacco.....	534	789	Rattans.....	503	485
Hardware, Cutlery, Ironware, and Machinery....	399	628	Areca Nuts.....	328	586
Bullion and Specie.....	3,176	2,313	Bullion and Specie.....	3,249	2,213

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	3,117	4,544	5,197	8,643
Federated Malay States.....	5,406	8,380	2,567	4,827
Dutch Possessions.....	4,553	5,912	5,039	5,149
India.....	5,593	4,872	1,324	2,021
Siam.....	2,450	3,939	1,431	1,926
Hong Kong.....	3,036	3,484	1,631	1,339

*Money.*—1 dollar=2s. 4d.

*Weights and Measures.*—The English yard is the measure of length, and the acre of area; 100 kati=1 pikul=133½ lb.; 1 gantang=1 gallon; 1 chupak=1 quart.

## FEDERATED MALAY STATES.

Imports.	NEGRI SEMBILAN.		PAHANG.		PERAK.		SELANGOR.	
	1902-5.	1906-10.	1902-5.	1906-10.	1902-5.	1906-10.	1902-5.	1906-10.
	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.
Total .....	5,073	4,468	1,172	1,781	19,579	22,099	21,263	23,369
Rice .....	1,151	1,120	255	322	4,513	5,339	4,201	4,850
Hardware, Cutlery, and Iron- ware .....	109	213	28	115	291	938	470	1,573
Opium .....	565	380	180	194	2,372	1,597	1,597	1,202
Cotton Piece Goods .....	94	141	50	54	891	997	822	930
Live-stock ...	81	29	7	44	1,235	1,071	561	768
Tobacco and Cigars .....	242	213	30	64	613	968	434	739
Coco-nut and other Oils	109	108	10	33	605	637	439	506
Spirits .....	147	133	17	55	337	571	339	469
Kerosene .....	86	126	25	44	342	508	260	440
Sugar .....	14	31	81	96	476	573	363	392
Specie .....	271	152	223	183	1,417	354	4,972	2,945

Exports.	NEGRI SEMBILAN.		PAHANG.		PERAK.		SELANGOR.	
	1902-5.	1906-10.	1902-5.	1906-10.	1902-5.	1906-10.	1902-5.	1906-10.
	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.	1,000 Dol.
Total .....	8,299	7,623	3,445	3,709	38,689	39,266	26,874	31,129
Tin and Tin Ore .....	6,581	4,722	2,217	2,919	31,106	33,656	24,223	20,682
Rubber .....	17	1,716	—	4	39	2,333	95	8,588
Sugar .....	—	—	—	—	1,795	810	—	—
Coffee .....	139	50	—	11	57	5	827	354
Paddy and Rice .....	1	2	—	—	388	685	4	8
Copra .....	—	2	7	10	103	416	88	200
Pepper .....	226	75	—	—	17	2	78	58
Tapioca .....	777	600	22	27	31	93	—	—
Rattans and Canes .....	4	4	104	47	8	18	6	4
Specie .....	51	14	634	495	757	283	924	334

FEDERATED MALAY STATES—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1905.	1906-10.	1905.	1906-10.
	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.
Total .....	50,575	81,687	80,057	81,726
British Possessions.....	48,879	47,051	79,993	77,891
United Kingdom.....	1,225	3,639	—	6,551
Foreign Countries.....	471	1,027	64	1,327

*Money, Weights, and Measures.*—As in Straits Settlements.

## AUSTRALASIA.

## COMMONWEALTH OF AUSTRALIA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	40,196	51,508	Total .....	51,238	69,337
Textiles .....	5,536	8,812	Wool.....	15,785	25,742
Iron and Steel..	1,877	2,875	Wheat.....	2,774	5,875
Machinery and			Gold and Bul-		
Locomotives..	1,758	2,555	lion.....	5,307	3,813
Apparel.....	1,745	2,394	Butter.....	1,601	2,974
Wood and Tim-			Hides and Skins	1,669	2,962
ber.....	1,311	1,908	Meat, frozen		
Liquors.....	1,361	1,408	and preserved	2,046	2,855
Paper.....	897	1,281	Copper.....	1,705	2,642
Bags and Sacks	614	1,205	Silver and* Sil-		
Wire and Wire			ver Lead, and		
Netting.....	541	1,188	Bullion.....	1,953	1,732
Tea .....	775	1,057	Flour.....	582	1,204
Drugs, Chemi-			Tallow.....	558	1,160
cals, and			Tin.....	620	1,152
Medicines..	602	779	Lead, pig and		
Arms, Ammuni-			matte.....	468	1,123
tion, and Ex-			Coal and Coke		
plosives.....	722	742	(excluding		
Tobacco.....	604	687	bunker).....	926	1,078
Rails for Rail-			Gold Specie.....	9,718	7,358
ways and					
Tramways....	686	677			
Kerosene.....	446	530			
Other Oils.....	399	563			
Jewellery and					
Precious					
Stones.....	405	524			
Gold Bullion....	1,078	1,279			
Silver Specie...	75	1,218			

COMMONWEALTH OF AUSTRALIA—*Continued.*TRADE OF THE STATES OF THE COMMONWEALTH  
(EXCLUDING INTER-STATE TRADE).

	Imports.		Exports.	
	1896-1900.	1906-10.	1896-1900.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
Total .....	33,767	51,508	41,093	69,337
New South Wales.....	13,866	20,483	17,656	27,277
Victoria.....	9,824	16,988	11,303	16,427
South Australia (including Northern Territory) .....	3,328	4,968	4,130	9,089
Western Australia.....	2,707	3,688	2,984	7,632
Queensland.....	3,488	4,580	4,237	7,046
Tasmania .....	550	799	783	1,865

## INTER-STATE TRADE.

	Imports.		Exports.	
	1896-1900.	1904-8.*	1896-1900.	1904-8.*
	£1,000.	£1,000.	£1,000.	£1,000.
Total .....	27,484	44,344	26,381	36,866
New South Wales.....	10,116	13,349	8,548	13,339
Victoria.....	6,782	8,582	5,257	10,137
South Australia (including Northern Territory).....	3,839	5,726	3,530	3,940
Western Australia.....	3,011	2,861	1,893	813
Queensland.....	2,676	4,168	5,890	7,113
Tasmania.....	1,060	793	1,263	1,558

\* Records for later years are not available.

**COMMONWEALTH OF AUSTRALIA—Continued.**  
**DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.**

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	25,236	31,242	25,196	32,984
Germany.....	2,799	3,477	2,552	6,362
France.....	464	468	2,309	8,446
United States.....	5,854	5,608	3,374	2,667
Belgium.....	568	1,018	1,506	4,985
India.....	1,184	1,990	543	2,283
Ceylon.....	499	713	2,734	2,212
Japan.....	288	566	123	1,145

*Money, Weights, and Measures.—British.*

**DOMINION OF NEW ZEALAND.**

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	12,411	16,542	Total.....	14,388	19,265
Iron and Iron Goods,			Wool.....	4,232	6,874
Hardware, Cutlery	1,120	1,475	Frozen Meat....	2,731	3,387
Machinery, and Parts			Gold Bullion....	1,965	2,041
of.....	724	1,065	Butter.....	1,239	1,559
Apparel and Slops .	555	764	Hides and Skins	513	952
Cotton Piece Goods	519	753	Cheese.....	198	817
Paper, Books, and			Tallow and		
Stationery.....	514	662	Oleomargar-		
Sugar.....	448	564	ine.....	425	580
Drapery.....	480	552	Flax (Phor-		
Liquors.....	341	431	mium).....	546	552
Drugs, Chemicals,			Kauri Gum.....	518	499
Druggists' Wares	302	416	Grain.....	607	262
Tobacco and Snuff..	227	373			
Oils.....	254	351			
Woollen Piece Goods					
and Blankets.....	389	331			
Fruit.....	208	303			
Bullion and Specie..	456	610			

DOMINION OF NEW ZEALAND—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10. <sup>†</sup>
	£1,000.	£1,000.	£1,000.	£1,000.
United Kingdom.....	6,886	9,902	9,295	15,710
Australia.....	1,980	2,773	1,994	2,221
United States.....	1,415	1,409	519	584
Fiji.....	350	546	44	69
Germany.....	199	360	10	89
India.....	334	369	10	4

*Money, Weights, and Measures.—British.*DISTRIBUTION OF FOREIGN TRADE OF THE SELF-GOVERNING  
DOMINIONS, CROWN COLONIES, POSSESSIONS, AND  
PROTECTORATES.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	£1,000,000.	£1,000,000.	£1,000,000.	£1,000,000.
Total.....	297	370	301	397
United Kingdom.....	137	166	127	178
British Possessions.....	59	62	58	58
Foreign Countries.....	101	143	117	161

## II.—NON-BRITISH LANDS.

## ALGERIA.

Imports.	1904.	1908-10.	Exports.	1904.	1908-10.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000 Francs.
Cotton Goods.....	35,109	53,621	Wine .....	95,160	118,242
Furniture and Wood- work.....	—	21,345	Sheep.....	32,065	33,584
Machinery.....	10,044	18,201	Wheat } .....	12,119	{ 31,124
Other Metal-work....	13,343	17,696	Barley } .....		{ 14,381
Clothing and Linen..	10,090	15,922	Cork.....	5,329	13,816
Skins and Manufac- tures.....	—	15,891	Fruit, fresh and dried..	6,896	11,908
			Zinc Ore.....	7,710	10,515
			Phosphates..	7,365	10,508
			Iron Ore.....	5,766	10,420
			Tobacco.....	5,021	9,585

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.
Total .....	363	489	305	425
France.....	291	397	238	310
United Kingdom.....	16	29	13	18
Marocco.....	9	10	2	9
Germany.....	2	3	6	9

*Money, Weights, and Measures.—As in France.*

## ARGENTINE REPUBLIC.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Pes. Oro.	1,000 Pes. Oro.		1,000 Pes. Oro.	1,000 Pes. Oro.
<b>Total.....</b>	<b>148,000</b>	<b>297,000</b>	<b>Total.....</b>	<b>231,000</b>	<b>345,000</b>
Cotton Tissues.....	14,660	19,913	Wheat and		
Coal and Coke.....	8,152	18,327	Wheat Flour	51,311	96,245
Railway Materials	6,846	17,606	Wool.....	50,714	56,734
Machinery, Agri-			Maize.....	33,191	48,642
cultural and In-			Linseed.....	22,038	39,864
dustrial.....	8,592	16,935	Hides, raw....	23,861	30,315
Iron, unwrought			Meat and		
and galvanised...	5,549	10,460	Meat Pro-		
Wine.....	5,254	9,808	ducts.....	18,171	28,213
Chemical Products	4,919	9,490	Oats.....	388	6,605
Sackcloth.....	5,723	6,929	Grease and		
Wood Manufac-			Tallow.....	4,840	6,286
tures.....	10,412	6,899	Bran.....	2,107	4,301
Apparel and Ready-			Cattle.....	3,458	2,752
made Clothing...	3,114	6,732	Butter.....	1,613	1,431
Paper, and Manu-					
factures thereof..	3,347	6,301			
Woollen Tissues...	3,485	5,080			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Pes. Oro.	1,000,000 Pes. Oro.	1,000,000 Pes. Oro.	1,000,000 Pes. Oro.
United Kingdom.....	36	99	30	67
Germany.....	17	45	21	39
France.....	10	29	29	36
United States.....	16	41	9	18
Belgium.....	9	15	13	32
Italy.....	15	26	4	9

*Money.*—1 peso oro=4s. (par value); 1 paper dollar=a little less than 1s. 9d.

*Weights and Measures.*—Metric.

## AUSTRIA-HUNGARY.

Imports (Merchandise only).	1901-5.	1906-10.	Exports (Merchandise only).	1901-5.	1906-10.
	1,000 Kronen.	1,000 Kronen.		1,000 Kronen.	1,000 Kronen.
Total .....	1,889,000	2,568,000	Total .....	2,052,000	2,456,000
Cotton, raw...	184,011	265,631	Wood and		
Coal and Coke	103,249	171,119	Wood Manu-		
Wool, raw.....	106,113	150,962	factures.....	278,195	325,040
Machinery and			Sugar and Mo-		
Locomotives	50,006	110,138	lasses .....	164,719	219,930
Hides and			Eggs.....	103,674	111,965
Skins .....	52,724	77,739	Live Animals	150,204	100,513
Leather and			Coal, chiefly		
Leather			Lignite.....	81,938	97,532
Wares.....	50,410	68,573	Malt and Bar-		
Flax, Hemp,			ley.....	111,934	88,950
and Jute....	48,937	62,239	Glass Wares..	53,262	71,671
Coffee.....	44,311	57,700	Woollen Man-		
Silk and Floss			ufactures....	52,477	68,118
Silk.....	44,209	55,810	Hides and		
Copper, raw.	31,649	50,624	Skins, raw...	48,160	66,142
Silk Manufac-			Cotton Manu-		
tures.....	31,246	50,132	factures.....	52,736	54,133
Tobacco.....	51,727	49,181	Leather and		
Woollen Man-			Leather		
ufactures....	27,279	39,935	Manufac-		
Iron and Steel			tures.....	50,920	49,192
Manufac-					
tures.....	24,127	37,584			

AUSTRIA-HUNGARY—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Kronen.	1,000,000 Kronen.	1,000,000 Kronen.	1,000,000 Kronen.
Germany.....	634	1020	978	1092
United Kingdom.....	136	214	187	230
Italy.....	104	122	136	212
United States.....	128	229	33	70
British East Indies..	95	174	60	61
Russian Empire.....	86	153	73	77
Switzerland.....	49	75	64	94

## HUNGARY

(SPECIAL COMMERCE).

Imports.	1906-10.	Exports.	1906-10.
	1,000 Crowns.		1,000 Crowns.
Total.....	1,685,448	Total .....	1,625,640
Cottons.....	191,924	Flour.....	223,529
Woollens.....	95,479	Oxen.....	99,347
Semi-woollen Goods..	30,011	Wheat.....	95,597
Leather.....	59,261	Swine.....	79,032
Coal.....	45,958	Barley.....	52,701
Cotton Yarn.....	29,909	Maize.....	52,109
Boots and Shoes.....	25,014	Rye.....	45,449
Men's Clothing.....	23,663	Eggs.....	34,856
Knitted Cotton Goods..	23,389	Oats.....	33,839
		Wine.....	33,489

*Money.*—In Austria-Hungary the unit is the krone or crown = 10d.*Weights and Measures* —Metric.

## BELGIUM.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000 Francs.
Total.....	2,622,000	3,705,000	Total.....	2,076,000	2,873,000
Grain of all kinds.....	402,892	554,873	Iron and Steel and Manu- factures.....	168,789	219,815
Raw Minerals (including uncut dia- monds).....	161,233	245,232	Grain.....	90,840	155,293
Wool.....	143,717	236,586	Locomotives and Railway Carriages....	56,535	134,328
Seeds, oleagin- ous.....	82,558	149,557	Other Machin- ery.....	40,290	59,718
Wood for Building....	141,136	141,769	Coal, Coke, and Briquettes..	116,293	115,407
Resins and Bitumens...	108,920	132,338	Flax, raw.....	81,156	101,584
Hides, raw....	76,009	120,125	Linen, Hemp, and Jute		
Flax, raw.....	95,755	109,410	Yarn.....	83,519	89,096
Coal and Coke	66,461	108,304	Zinc, un- wrought....	60,217	85,655
Cotton, raw...	53,124	78,850	Glass and Glass Wares	85,811	84,393
Pig-iron and Ore.....	49,602	76,848	Hides, raw....	58,475	83,487
Dyes and Dye Stuffs.....	45,004	71,882	Woollen Yarn and Manu- factures.....	55,585	63,741
Coffee.....	42,420	70,134	Cotton Manu- tures.....	38,709	62,341
Machines and Machinery (excluding locomotives)	45,331	67,765			

BELGIUM—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.
Germany.....	300	489	415	727
France.....	351	617	350	542
United Kingdom.....	227	376	342	410
Netherlands.....	199	285	201	299
United States.....	336	293	78	97
Argentine Republic.....	99	278	21	104
Russia.....	106	268	29	44
British East Indies.....	71	146	25	50
Romania.....	83	159	4	17

*Money.*—Belgium belongs to the Latin Monetary Union; the unit is the franc=9 $\frac{1}{2}$ d., or 25 to the £. *Weights and Measures.*—Metric.

## BOLIVIA.

Total Trade.	1901-5.	1906-10.	Exports.	1901-3.	1907-8.
	1,000 Bolivianos.	1,000 Bolivianos.		1,000 Bolivianos.	1,000 Bolivianos.
Imports . . .	19,220	39,427	Total.....	18,306	48,700
Exports .....	32,800	58,266	Tin .....	9,998	30,408
			Rubber .....	5,681	7,120
			Silver.....	10,892	7,272
			Copper.....	1,657	1,487
				1901-3.	1907-8.
				1,000 Bolivianos.	1,000 Bolivianos.
Imports from United Kingdom.....				2,483	4,016
Exports to United Kingdom .....				6,114	13,203
					1911.
					1,000 Bolivianos.
					4,062
					19,795

*Money, Weights, and Measures.*—12 $\frac{1}{2}$  bolivianos=£1. The Metric is the legal system, but the old Spanish system is still in use.

## BRAZIL.

Imports.	1902-5.	1906-10.	Exports.	1902-5.	1906-10.
	1,000 Milreis.	1,000 Milreis.		1,000 Milreis.	1,000 Milreis.
Total.....	229,000	345,000	Total.....	350,000	494,000
Iron and Steel			Coffee, raw ...	179,515	247,797
Manufactures...	15,285	35,808	Rubber.....	94,805	147,738
Wheat and Wheat			Hides and		
Flour.....	23,155	34,154	Skins .....	13,481	21,900
Machinery, Ap-			Yerba Maté		
paratus, Tools,			(Paraguay		
&c. ....	12,332	30,326	Tea).....	8,843	15,527
Cotton Manufac-			Cacao.....	9,265	14,860
tures .....	26,838	29,563	Tobacco.....	8,472	10,634
Coal.....	11,492	17,662	Cotton, raw...	10,026	9,036
Wine.....	13,640	15,504	Sugar.....	3,631	4,263
Jerked Beef.....	11,989	9,316	Gold, in bars	3,866	3,935
Cod Fish, salted..	5,981	8,132	Manganese		
Chemicals and			Ore.....	2,464	2,959
Drugs.....	5,050	7,791			
Arms, Ammuni-					
tion, and Mili-					
tary Stores.....	2,007	5,666			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1902.	1906-10.	1902.	1906-10.
	1,000,000 Milreis.	1,000,000 Milreis.	1,000,000 Milreis.	1,000,000 Milreis.
United States .....	25	43	120	181
United Kingdom.....	58	98	56	86
Germany.....	24	52	51	76
France.....	18	32	34	50
Argentine Republic.....	18	33	9	18
Belgium.....	5	14	7	13
Netherlands.....	1	2	16	21

*Money.*—The gold milreis is equivalent to 2s. 3d. (par value).

*Weights and Measures.*—The French Metric System is compulsory, but the old system is still sometimes employed.

## BULGARIA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000 Francs.
Total.....	95,000	140,000	Total.....	120,000	118,000
Cotton Manufactures.....	12,157	14,182	Wheat.....	45,009	35,981
Raw Cotton and Yarn.....	8,718	11,722	Other Grain...	32,115	29,165
Machinery and Apparatus.....	3,301	9,508	Eggs.....	7,003	9,497
Iron Manufactures	3,481	8,087	Flour of all kinds.....	3,308	6,733
Hides and Leather	3,737	4,939	Live-stock....	5,468	5,522
Woollen Manufactures.....	3,250	4,553	Attar of Roses	1,761	4,839
Wood, rough or sawn.....	2,002	3,891	Hides and Skins.....	3,118	3,601
Sugar, refined.....	3,479	3,363	Haricots.....	1,442	3,183
Petroleum.. ..	2,630	3,308	Cheese.....	2,691	2,917
			Woolen Manufactures.....	1,761	2,806

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.
Austria-Hungary.....	17	37	7	8
Turkey .....	10	19	24	53
Germany.....	10	24	9	14
United Kingdom.....	14	23	16	14
Belgium.....	2	5	11	29
France.....	4	9	5	7

*Money.*—A lev is equivalent to a franc. (See France.)

*Weights and Measures.*—Metric.

## CHILE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Pes. Fuer.	1,000 Pes. Fuer.		1,000 Pes. Fuer.	1,000 Pes. Fuer.
Total.....	152,000	271,000	Total.....	209,000	299,000
Machinery .....	13,151	32,430	Nitrate of		
Coal.....	17,076	27,433	Soda.....	146,514	220,784
Cotton Manufac- tures .....	18,211	17,965	Bar Copper .	17,911	15,319
Iron and Steel.....	8,502	16,591	Coal.....	6,552	8,685
Animals (mainly Cattle) .....	4,512	11,344	Wheat.....	3,261	7,340
Woollen Manufac- tures .....	5,994	10,029	Ores.....	4,139	7,019
Sacks.....	3,873	7,119	Iodine.....	4,764	4,985
Oil, Mineral.....	2,103	6,619	Borate of		
Sugar.....	4,809	6,507	Lime.....	1,507	4,311
Cotton Yarn.....	2,474	3,454			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Pesos Fuer.	1,000,000 Pesos Fuer.	1,000,000 Pesos Fuer.	1,000,000 Pesos Fuer.
United Kingdom.....	50	133	39	136
Germany.....	34	68	58	61
United States .....	17	29	15	48
France.....	9	15	28	16
Argentine Republic.....	3	12	0.25	3

*Money.*—The peso fuerte (gold) is equivalent to 1s. 6d. ; 13½ pesos = £1.

*Weights and Measures.*—Metric. The old Spanish system is also employed.

**CHINA**  
(EXCLUSIVE OF HONG-KONG).

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Haikwan Taela.	1,000 Haikwan Taela.		1,000 Haikwan Taela.	1,000 Haikwan Taela.
<b>Total.....</b>	<b>340,314</b>	<b>420,460</b>	<b>Total.....</b>	<b>213,113</b>	<b>299,475</b>
Cotton Yarn and Manufactures	130,271	130,102	Silk and Silk Manufactures	72,613	86,543
Opium.....	36,678	37,264	Tea.....	24,671	32,149
Sugar.....	18,207	25,041	Raw Cotton. ....	13,601	16,306
Rice.....	11,048	23,858	Beans.....	5,122	13,948
Oil, Kerosene...	18,555	20,935	Beancake.....	4,798	12,952
Metals of all kinds.....	20,599	19,734	Skins, Skin Clothing, and Rugs.....	6,372	7,978
Fish and Fishery Products.....	5,769	8,378	Straw Braid.....	4,467	7,768
Coal.....	7,593	8,302	Hides (Cow and Buffalo).....	5,421	7,721
Machinery.....	2,436	7,081	Oil (Bean, Groundnut, &c.).....	3,486	6,767
Flour.....	3,747	6,669			
Wool and Wool- len Manufac- tures.....	4,751	6,146			
Cigars and Cigarettes.....	2,955	5,801			

**DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.**

	Imports.		Exports.	
	1901.	1906-10.	1901	1906-10.
	1,000 Haikwan Taela.	1,000 Haikwan Taela.	1,000 Haikwan Taela.	1,000 Haikwan Taela.
<b>British Possessions.....</b>	<b>155,316</b>	<b>192,336</b>	<b>77,922</b>	<b>107,002</b>
Japan.....	32,568	61,549	16,876	44,587
United Kingdom.....	41,224	73,608	8,561	15,249
United States.....	23,530	35,998	16,573	28,166
France.....	—	2,957	—	33,115
Russian Empire.....	3,360	8,317	9,281	30,388
Germany.....	—	16,823	—	7,967

*Money.*—The unit is the copper cash=about  $\frac{1}{4}$ d. About 1220 of these units are equivalent to 1 halkwan tael, or about 2s. 8 $\frac{1}{2}$ d. (1911). The silver dollar (similar to the Mexican dollar) is also much used in all the provinces.

*Weights and Measures.*—16 liang (tael)=1 chin or catty; 100 chin=1 picul or 133 $\frac{1}{2}$  lb. (avoirdupois); 1 ch'ih=1.175 feet; 10 ch'ih=1 chang or 2 fathoms; 1 M=2115 feet.

## COLOMBIA.

Total Trade.	1905.	1906-10.	Exports.	1909-11.
	1,000 Gold Pesos.	1,000 Gold Pesos.		1,000 Gold Pesos.
Imports.....	9,353	12,580	Total....	18,504
Exports .....	14,835	15,384	Coffee...	6,815
Imports from United Kingdom, merchandise	2,455	5,080	Bananas	1,217
Exports to United Kingdom, merchandise.....	1,475	2,535	Rubber	514

*Money.*—1 gold peso=4s.

*Weights and Measures.*—Metric. Colombian measures also commonly used. 1 arroba=25 Colombian lb.=12 $\frac{1}{2}$  kilos; 1 quintal=100 Colombian lb.; 1 vara=80 cm.

## COSTA RICA.

Imports.	1903-5.	1906-10.	Exports.	1903-5.	1906-10.
	1,000 Colones.	1,000 Colones.		1,000 Colones.	1,000 Colones.
Total.....	12,000	15,009	Total.....	16,000	18,153
Cotton Piece Goods..	1,698	1,933	Bananas....	6,440	9,609
Iron and Steel Manufactures.....	989	1,785	Coffee.....	7,834	6,071
Wheat Flour.....	645	843	Gold, in bars.....	562	972
Cattle.....	554	749	Silver, in bars.....	12	463
Machinery.....	254	418	Wood.....	136	222
Woollen Piece Goods	376	342	Hides and Skins.....	215	197
Wood for Building and Furniture.....	250	319	Caoutchouc	155	155
Coal.....	110	296	Cacao.....	98	137
Butter.....	200	254			
Fish.....	157	201			

COSTA RICA—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1903.	1906-10.	1903.	1906-10.
	1,000 Colones.	1,000 Colones.	1,000 Colones.	1,000 Colones.
United States .....	5,280	6,823	6,587	9,639
United Kingdom.....	2,268	2,902	7,673	7,392
Germany.....	1,163	1,777	724	713

*Money.*—The colon = 1s. 11d.

*Weights and Measures.*—Metric. The old Spanish system is still in use in the country districts.

## DENMARK.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Kroner.	1,000 Kroner.		1,000 Kroner.	1,000 Kroner.
Total.....	576,000	717,109	Total.....	342,000	587,506
Grain.....	62,765	77,242	Butter.....	145,332	175,334
Oilcake and Oil- cake Meal.....	35,637	54,601	Meat.....	87,191	114,154
Coal and Coke....	36,537	47,095	Animals.....	31,774	42,463
Iron and Steel			Eggs.....	24,562	25,242
Manufactures..	35,672	45,355	Hides and Skins.....	8,421	12,826
Wood and Manu- factures.....	33,440	34,244	Grain and Flour.....	5,686	7,106
Seeds.....	17,008	25,437	Iron and Steel Manufac- tures .....	3,073	4,299
Wool Manufac- tures.....	20,640	22,340	Raw Wool.....	1,617	1,619
Hides and Skins..	14,041	20,893			
Cotton, Flax, and Hemp Manu- factures.....	17,426	19,931			
Coffee.....	11,748	13,817			
Oil.....	10,369	13,733			
Metal Wares.....	9,843	10,896			

DENMARK—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.
United Kingdom. ....	87,919	117,159	249,258	302,193
Germany..... .	147,497	245,520	68,181	126,647
United States.....	86,911	100,708	9,372	23,504
Sweden..... .	47,393	60,486	39,885	42,051
Russia..... .	58,070	70,585	16,437	30,071

*Money.*—1 krone=100 öre=1s. 1½d., or about 18 kroner=£1.

*Weights and Measures.*—Metric.

## ECUADOR.

Total Trade.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Sucres.	1,000 Sucres.		1,000 Sucres.	1,000 Sucres.
Imports.....	15,342	18,480	Cacao.....	12,769	17,590
Exports.....	18,981	28,000	Tagua, or Ivory		
Imports from United			Nuts.....	1,599	3,410
Kingdom.....	349	429	Panama Hats..	779	2,210
Exports to United			Rubber.....	1,013	1,740
Kingdom.....	932	1,399			

*Money.*—1 sucre=2s. .

*Weights and Measures.*—The Metric System is the legal standard, but in commerce the old Spanish system is employed. 1 quintal=101 lb.

## EGYPT.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 £E.	1,000 £E.		1,000 £E.	1,000 £E.
Total.....	17,787	24,203	Total.....	18,982	25,845
Cotton Piece Goods.....	2,620	3,200	Cotton.....	14,781	21,387
Flour of Wheat and Maize....	625	1,451	Cotton Seed ....	1,717	2,359
Iron and Steel Manufactures	931	1,329	Tobacco, manu- factured.....	465	304
Wood for Build- ing.....	1,012	1,259	Oilcake .....	194	238
Coal.....	912	1,253	Onions .....	216	221
Tobacco, raw and manufac- tured.....	632	853	Hides and Skins	97	179
Machinery and Locomotives..	666	824	Rice.....	117	172
Woollen Piece Goods.....	338	436	Sugar, Cane.....	375	61

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 £E.	1,000 £E.	1,000 £E.	1,000 £E.
United Kingdom (including mili- tary stores).....	5,699	5,940	8,111	13,455
France and Algeria.....	1,406	2,931	1,273	2,133
Germany .....	530	1,242	338	2,341
Turkey.....	2,246	2,951	313	445
Austria-Hungary.....	1,051	1,698	657	1,206

*Money.*—1 gold Egyptian pound=100 piastres=£1, Os. 6½d.

*Weights and Measures.*—1 kantar=100 rotals=36 okes=99 lb. ;  
1 ardeb=43·6 gallons, or 5·45 bushels.

## FRANCE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000 Francs.
Total.....	4,569,000	5,513,000	Total.....	4,367,000	5,645,000
Wool.....	411,867	608,721	Raw Wool		
Raw Cotton..	299,687	430,790	and Yarn...	262,204	351,867
Coal and Coke	263,472	404,856	Cotton Manu-		
Silk, raw,			factures.....	199,119	319,419
thrown,			Silk Manufac-		
waste, and			tures.....	286,584	316,897
cocoons... ..	294,136	348,304	Hides.....	239,160	230,577
Fruit and			Woollen Man-		
Seeds, olea-			nufactures ...	211,468	218,015
ginous.....	211,591	287,041	Wine.....	228,487	215,900
Machinery....	115,344	214,383	Silk, raw,		
Hides and			thrown,		
Skins.....	159,223	182,437	waste, co-		
Common Tim-			coons, and		
ber.....	168,996	178,590	spun.....	165,916	188,607
Cutch and			Haberdashery		
Gutta-			and Fancy		
percha,			Wares.....	164,984	188,163
crude.....	65,746	174,774	Apparel.....	126,985	146,572
Wine.....	129,184	148,742	Motor Cars		
Copper.....	85,537	140,597	and Vehicles	53,679	143,419
Coffee.....	92,923	109,657	Chemical Pro-		
Petroleum....	61,613	88,971	ducts.....	97,789	136,378
Flax.....	79,320	82,624	Iron and Steel		
Ornamental			and Manu-		
Feathers,			factures.....	105,028	128,407
unprepared	43,322	73,192	Raw Cotton		
Nitrate of			and Yarn...	58,929	105,814
Soda.....	50,896	70,149	Machines and		
			Machinery.	59,250	91,810
			Paper and		
			Manufac-		
			tures of.....	63,764	89,852
			Butter and		
			Cheese.....	87,388	87,777
			Sugar.....	94,087	84,349

FRANCE—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.
United Kingdom .....	602	848	1,198	1,276
Germany .....	402	670	443	687
Belgium .....	358	424	562	864
United States....	457	652	253	408
Algeria.....	198	305	259	397
Switzerland .....	103	120	217	341
Italy .....	140	179	155	278
Argentine Republic..	254	286	51	126
British India.....	191	320	20	25

*Currency.*—The unit of the French coinage is the franc, worth about 9½d., and divided into 100 centimes. The gold and the silver coinage of Belgium, Italy, Switzerland, and Greece are based on the same units, and being of the same fineness, size, and weight, are generally accepted. The same monetary system has been adopted, either wholly or partially, in Spain, Rumania, Bulgaria, Servia, Russia, Finland, and several South American states.

*Weights and Measures.*—The unit of length is the metre, 39·4 inches approximately. It is subdivided into tenths or decimetres, hundredths or centimetres, and thousandths or millimetres. A centimetre is  $\frac{1}{2}$  and a millimetre  $\frac{1}{16}$  of an inch. The unit of distance is the kilometre, measuring 1000 metres, or  $\frac{5}{8}$  mile. The square kilometre is about  $\frac{2}{3}$  of a square mile, and contains 100 hectares, each about 2½ acres.

The unit of weight is the gram (gramme). 1000 grams, or about 2½ lb. avoirdupois, make a kilogram. In ordinary retail trade most goods are sold by the demi-kilo of 500 grams, otherwise known as the livre or pound, and weighing 1½ lb. avoirdupois. The metrical ton, or tonneau, consists of 1000 kilograms, or 2205 lb., against the English ton of 2240 lb. The measure of capacity is the litre, 1½ pints.

## GERMAN EMPIRE.

Imports.	1901-5.*	1906-10.*	Exports.	1901-5.*	1906-10.*
	1,000 Marks.	1,000 Marks.		1,000 Marks.	1,000 Marks.
Total.....	6,108,000	8,380,000	Total.....	5,015,000	6,735,000
Cotton, raw and waste..	404,564	526,103	Iron and Steel and Mannu- factures....	595,450	808,966
Hides and Skins.....	216,043	411,869	Chemicals, Drugs, and Dyes .....	460,572	513,651
Chemicals, Drugs, and Dyes .....	362,751	395,371	Machinery....	215,803	438,256
Wheat.....	283,464	369,923	Coal and Coke	271,908	371,381
Barley.....	146,868	279,801	Cotton Manu- factures....	300,181	362,286
Other Grain..	231,667	208,376	Woollen Manu- factures....	245,378	265,796
Raw Wool....	282,258	364,889	Grain, Flour, and Meal...	130,573	250,010
T i m b e r, Planks, and Builders' Materials...	219,325	275,319	Hides and Skins .....	156,076	248,970
Copper, raw and scrap...	117,793	218,581	Leather and L e a t h e r Wares .....	167,461	247,612
Animals.....	204,871	198,823	Sugar.....	182,091	206,394
Silk and Floss			Silk Manufac- tures .....	148,186	190,483
Silk.....	146,994	179,347	Jewellery and Fine Fancy Wares .....	130,985	147,414
Coal.....	102,229	172,601	Wearing Ap- parel .....	143,873	106,363
Coffee.....	153,861	172,073	G l a s s a n d Glass Wares	52,147	101,861
C a o u t c h o u c and Gutta- p e r c h a, crude.....	88,266	152,780	Paper.....	67,023	101,188
Eggs .....	112,844	150,441	Books, Maps, Engravings, &c. ....	169,475	96,928
Grease.....	101,592	148,681			
Iron Ore.....	80,662	142,739			
Tobacco.....	121,644	138,886			

\* After 1st March 1906 the statistics of the German Economic Union include the trade of the Free Ports of Hamburg, Cuxhaven, Bremerhaven, and Geestemünde.

## GERMAN EMPIRE—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Marks.	1,000,000 Marks.	1,000,000 Marks.	1,000,000 Marks.
United States .....	986	1,258	385	607
United Kingdom.....	553	798	907	1,048
Russian Empire.....	682	1,197	329	521
Austria-Hungary.....	684	778	464	728
France .....	272	460	249	454
Belgium .....	183	293	236	352
Switzerland .....	148	228	257	417
Argentina and Patagonia .....	201	411	54	182
Italy .....	178	265	123	291
British East Indies.....	215	399	80	105

*Money, Weights, and Measures.*—The monetary unit is the mark, of which 20·43 are equivalent to £1. Metric weights and measures are used.

## GREECE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Drachmai.	1,000 Drachmai.		1,000 Drachmai.	1,000 Drachmai.
Total.....	139,000	149,000	Total.....	87,000	120,000
Grain .....	32,663	36,768	Currants.....	29,972	36,928
Cotton Manu- factures....	10,025	10,447	Olive Oil.....	4,106	10,534
Coal.....	7,601	10,057	Wine.....	6,344	9,652
Fish.....	4,981	7,025	Argentiferous Lead Ore....	8,137	8,308
Woollen Man- ufactures....	4,630	5,128	Other Ores....	5,601	11,167
Living Ani- mals.....	5,285	4,306	Tobacco, leaf.	5,427	8,234
Paper and Paper Man- ufactures....	3,110	3,889	Figs.....	3,295	4,193
Wood for Building....	5,266	3,814	Olives.....	1,134	3,602
Hides and Skins.....	3,908	3,589			
Raw Cotton and Yarn...	2,991	3,133			
Coffee.....	2,899	2,877			

GREECE—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Drachmai.	1,000,000 Drachmai.	1,000,000 Drachmai.	1,000,000 Drachmai.
United Kingdom .....	31	32	29	31
Russia .....	31	27	0·7	3
Austria-Hungary .....	17	18	8	11
Germany .....	12	14	7	11

*Money.*—Greece belongs to the Latin Monetary Union; a drachma is equivalent to a franc.

*Weights and Measures.*—The Metric System is replacing the old.

## GUATEMALA.

Imports.	1901-5.	1906-9.	Exports.	1901-5.	1906-9.
	1,000 Dollars.	1,000 Dollars.		1,000 Dollars.	1,000 Dollars.
Total .....	4,627	6,400	Total .....	7,812	8,536
Cottons .....	—	1,437	Coffee .....	6,813	7,423
Iron, Machinery, and Coal .....	—	580	Hides and Skins .....	212	299
Provisions, Food Stuffs, and Liquors .....	—	471	Timber .....	264	215
			Bananas .....	106	191
			Rubber .....	199	180

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.
United States .....	1,633	2,231	2,917	2,926
United Kingdom .....	1,162	1,286	1,047	1,036

*Money.*—1 dollar or peso = 100 centavas = 4s.

*Weights and Measures.*—The Metric System is now adopted, but the old is still in use. 1 tonelada = 20 quintals = 18·10 cwt.

## ITALY.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10
	1,000 Lire.	1,000 Lire.		1,000 Lire.	1,000 Lire.
Total.....	1,867,000	2,944,000	Total.....	1,538,000	1,911,000
Raw Cotton...	184,437	276,548	Silk, raw and thrown .....	432,415	479,328
Coal and Coke	149,347	245,141	Silk, waste....	41,475	45,985
Wheat .....	191,856	242,212	Cotton Manu- factures.....	68,794	113,404
Silk, thrown and in co- coons.....	182,484	208,583	Pure Silk Manufac- tures .....	58,489	66,481
Machinery and Loco- motives.....	77,038	198,370	Butter and Cheese.....	36,788	56,788
Timber for Building....	63,625	124,036	Olive Oil.....	39,300	51,211
Raw Wool and Waste..	57,575	82,238	Wine.....	47,220	50,162
Fish.....	43,649	70,041	Eggs .....	46,091	46,812
Hides.....	42,762	57,620	Hemp and Flax, raw...	40,603	45,914
Iron and Steel, wrought....	21,166	54,350	Hides and Skins.....	22,647	35,580
			Sulphur.....	43,151	32,909

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Lire.	1,000,000 Lire.	1,000,000 Lire.	1,000,000 Lire.
Germany.....	206	495	235	280
United Kingdom.....	279	488	151	159
United States .....	234	372	140	243
France.....	179	288	175	207
Austria-Hungary.....	178	275	131	152
Switzerland.....	57	100	204	292
Argentina.....	38	74	63	147

*Money.*—Italy belongs to the Latin Monetary Union. The lira is equivalent to the franc. (See France.)

*Weights and Measures.*—Metric.

## JAPANESE EMPIRE.

## JAPAN.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Yen.	1,000 Yen.		1,000 Yen.	1,000 Yen.
Total.....	340,916	441,588	Total.....	288,189	421,190
Raw Cotton, ginned and in seeds.....	78,720	109,217	Silk, raw .....	77,308	118,214
Metals and Metal Man- ufactures....	34,592	54,613	Silk, waste....	5,793	7,055
Machines and Machinery..	18,678	34,093	Cotton Yarn..	27,060	32,674
Cotton Goods and Yarn...	14,304	22,706	Silk Tissues...	29,552	29,273
Oilcake.....	8,984	21,063	Copper.....	13,608	23,499
Rice.....	37,872	20,404	Cotton Mann- factures.....	8,999	20,161
Sugar.....	21,134	17,939	Coal.....	16,804	17,492
Wool and Woolen	•	•	Tea.....	16,950	12,429
Yarn.....	8,130	15,259	Matches.....	8,832	10,368
Oil, Kerosene	14,319	13,543	Porcelain and Earthen- ware.....	3,004	6,202
Soya Beans...	6,689	7,811	Sugar, refined	845	5,641
			Straw Plait...	3,742	4,441
			Camphor.....	5,398	3,430

## FORMOSA.

Imports.	1902-5.	1906-10.	Exports.	1902-5.	1906-10.
	1,000 Yen.	1,000 Yen.		1,000 Yen.	1,000 Yen.
Total (excluding trade with Japan Proper)..	9,526	12,695	Total (exclud- ing trade with Japan Proper).....	8,884	10,498
Opium.....	1,848	2,791	Tea.....	6,136	5,499
Tobacco, leaf....	368	759	Camphor.....	2,405	2,972
Cotton Goods...	564	711	Flax, Hemp, and Jute....	472	471
Petroleum.....	829	693	Rice.....	1,475	219
Timber and Board	559	563			
Rails.....	163	429			
Oilcake, Bean and Tea-seed.....	69	328			

## JAPANESE EMPIRE—Continued.

DISTRIBUTION OF TRADE WITH OTHER COUNTRIES  
(JAPAN AND FORMOSA).

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Yen.	1,000 Yen.	1,000 Yen.	1,000 Yen.
United States ... ..	44,285	69,055	72,878	134,932
China.....	32,913	76,569	49,409	103,482
United Kingdom.....	52,685	103,991	11,483	25,206
British East Indies and Straits Settlements....	43,282	75,905	9,658	19,576
Germany.....	28,447	45,099	5,251	9,953

## KOREA.

Imports.	1905.	1906-10.	Exports.	1905.	1906-10.
	1,000 Yen.	1,000 Yen.		1,000 Yen.	1,000 Yen.
Total.....	32,971	37,874	Total.....	7,916	15,232
Cotton Yarn and Manufactures...	10,073	8,991	Rice.....	889	5,490
Timber.....	720	1,340	Beans.....	2,696	4,107
Silk Goods.....	1,176	1,176	Cow Hides....	698	732
Oil, Kerosene.....	880	1,143	Live-stock.. ..	90	673
Machinery.....	200	992	Ginseng, red..	1,100	446
Coal and Coke....	315	915			
Sugar.....	546	806			

*Money.*—The monetary unit throughout the Japanese Empire is the yen, equivalent to 2s. 0½d.

*Weights and Measures.*—The kin=160 mommé=1½ lb.; the kwan=8.28 lb.; the shaku=10 sun=11.9 inches; a ri=2.44 miles. The Metric System is also used in the following ratios: 1 metre=3.3 shaku; 1 gram=0.266 mommé.

## MAROCCO.

Imports. •	1906-10.	1911.	Exports.	1906-10.	1911.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	3,340	5,309	Total.....	2,116	3,409
Cotton Manu- factures.....	936	1,081	Barley.....	348	473
Sugar.....	685	1,092	Hides and Skins	328	379
Tea.....	212	245	Oxen.....	210	232
Flour and Semo- lina.....	165	161	Eggs.....	194	235
Iron, Machinery, and Hardware	82	203	Wool.....	155	232
Candles.....	84	139	Almonds.....	112	58
			Slippers.....	72	58

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1906-10.	1911.	1906-10.	1911.
	£1,000.	£1,000.	£1,000.	£1,000.
France.....	1,251	2,225	629	1,259
United Kingdom.....	1,209	1,513	543	792

*Money.*—Spanish, French, and Moorish coins are current.

*Weights and Measures.*—1 kintar, used for the produce of the country, sold by weight=100 rotals=generally 168 lb.; 1 kintar, used in selling imported articles=100 rotals=112 lb.; 1 drah=8 tominis=about 22 inches.

## MEXICO.

Imports.	1900-1 to 1904-5.	1905-6 to 1909-10.	Exports.	1900-1 to 1904-5.	1905-6 to 1909-10.
	1,000 Dollars.	1,000 Dollars.		1,000 Dollars.	1,000 Dollars.
Total.....	149,000	205,000	Total.....	178,000	251,000
Machinery.....	15,986	22,035	Silver and Sil- ver Bullion.....	56,865	76,597
Cotton Manufac- tures.....	9,063	10,630	Gold and Gold Bullion.....	10,313	32,841
Chemicals and Chemical Pro- ducts.....	5,851	9,676	Raw Hene- quen.....	27,830	26,755
Iron and Steel Manufactures...	5,861	8,731	Copper, un- wrought, and Ore....	20,238	25,767
Coal and Coke....	7,648	8,345	Coffee.....	8,815	9,534
Wood and Wooden Wares.....	7,004	10,109	Hides and Skins, raw..	6,204	9,061
Railway Materials	5,478	5,910	Caoutchouc...	449	8,688
Raw Cotton and Yarn.....	7,505	4,846	Lead.....	5,359	5,431
			Henequen Manufac- tures.....	9,100	468

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1900-1.	1905-6 to 1909-10.	1900-1.	1905-6 to 1909-10.
	1,000,000 Dollars.	1,000,000 Dollars.	1,000,000 Dollars.	1,000,000 Dollars.
United States.....	70	123	117	180
United Kingdom.....	20	24	12	30
Germany.....	14	22	5	17
France.....	12	16	3	10

*Money.*—The standard dollar = 24.58d.

*Weights and Measures.*—Metric. The old Spanish measures are occasionally employed.

## NETHERLANDS.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Gulden.	1,000 Gulden.		1,000 Gulden.	1,000 Gulden.
Total.....	2,285,000	2,884,000	Total.....	1,894,000	2,313,000
Peruvian Bark	277,981	315,363	Grain and		
Wheat.....	182,287	190,433	Flour.....	212,724	218,317
Other Cereals	146,070	166,650	Peruvian Bark	220,951	218,003
Iron and Iron			Iron and Steel		
Wares.....	154,431	178,195	and Manu-		
Copper.....	94,173	153,048	factures....	161,457	181,429
Steel and			Copper.....	86,489	130,930
Manufac-			Cotton and		
tures.....	94,689	112,403	Cotton Man-		
Coal.....	64,928	90,305	ufactures....	58,945	77,907
Rice.....	64,901	89,188	Paper, and		
Timber.....	57,739	82,830	Manufac-		
Flour and			tures thereof	45,932	67,884
Meal.....	68,157	77,955	Rice and Rice		
Raw Cotton			Flour.....	34,879	50,803
and Yarn...	55,012	70,517	Margarine....	48,476	48,241
Paving Stones	63,791	68,563	Sugar.....	51,053	44,229
Coffee.....	48,440	53,132	Coffee.....	33,090	35,326

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Gulden.	1,000,000 Gulden.	1,000,000 Gulden.	1,000,000 Gulden.
German Empire.....	468	697	901	1,180
United Kingdom.....	248	309	426	489
Belgium.....	225	282	175	289
Java and Madura, and Nether-				
lands East Indies.....	323	420	61	88
United States.....	303	303	79	87
Russia.....	160	339	8	13

*Money.*—1 gulden, guilder, or florin = 100 cents = 1s. 8d., or 12 = £1.

*Weights and Measures.*—Metric.

## NICARAGUA.

	Imports.		Exports.	
	1901-5.	1906-10.	1901-5.	1906-10.
	1,000 Pesos.	1,000 Pesos.	1,000 Pesos.	1,000 Pesos.
Total.....	2,529	3,006	3,529	3,955
United States....	1,604	1,783	1,794	1,199
United Kingdom....	705	787	340	505

Exports.	1903-5.	1906-10.	Exports.	1903-5.	1906-10.
	1,000 Pesos.	1,000 Pesos.		1,000 Pesos.	1,000 Pesos.
Coffee.....	1,378	2,880	Bananas.....	540	110
Gold.....	633	520	Rubber.....	354	—
Hides.....	99	250	Cattle.....	196	—

*Money.*—1 gold peso = 4s. *Weights and Measures.*—Metric.

## NORWAY.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Kroner.	1,000 Kroner.		1,000 Kroner.	1,000 Kroner.
Total .....	205,000	384,241	Total.....	172,000	262,631
Corn and Meal..	51,769	61,126	Fish and Fish		
Coal, Coke, and			Products.....	47,647	59,370
Cinders .....	24,062	28,997	Wood.....	37,715	38,935
Iron and Steel			Wood Pulp.....	24,637	35,769
Wares.....	19,009	17,832	Paper.....	9,588	17,843
Machinery and			Condensed Milk	6,190	7,230
Locomotives...	6,819	14,784	Hides and Skins	3,786	7,064
Iron, wrought			Train Oil .....	5,857	5,941
and unwrought	9,071	14,023	Sulphur.....	2,614	5,131
Hides and Skins	7,392	11,628	Calcium Carbide	940	4,731
Cotton Manu-			Sailing and		
factures.....	7,782	10,821	Steam Vessels	3,839	3,234
Coffee.....	8,800	10,278	Butter.....	2,625	2,711
Sugar.....	8,296	10,229	Copper.....	1,657	2,134

## NORWAY—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.
United Kingdom.....	79,095	97,373	69,708	91,722
Germany.....	77,492	110,222	20,094	43,545
Sweden.....	24,029	44,614	15,218*	16,585*
United States.....	18,100	20,819	1,527	12,942

*Money.*—The Norwegian krone=1 Swedish krona=100 öre=1s. 1½d.

*Weights and Measures.*—Metric.

\* The statistics prior to 1900 are incomplete.

## PERSIA.

Imports.	1903-4.	1906-7 to 1910-11.	Exports.	1903-4.	1906-7 to 1910-11.
	1,000 Krâns.	1,000 Krâns.		1,000 Krâns.	1,000 Krâns.
Total.....	385,036	427,779	Total.....	255,774	548,724
Cotton Goods....	135,105	137,265	Raw Cotton.....	19,439	54,909
Sugar.....	82,102	109,330	Fruits.....	43,436	52,776
Tea.....	16,873	23,820	Woollen Carpets	22,413	41,956
Woollen Goods.	14,490	12,226	Rice.....	21,686	26,359
Cotton Yarn.....	7,017	9,454	Fish.....	40,199	20,978
Petroleum.....	4,162	7,046	Cocoons.....	24,627	16,405
Iron and Steel and Manufac- tures.....	8,733	5,147	Opium.....	16,520	15,376
Flour.....	4,671	4,820	Skins.....	9,708	12,545
Silks.....	8,152	4,101	Gums.....	6,581	12,001
Haberdasheries	—	3,940	Wool.....	9,505	11,377
Rice.....	3,415	3,890	Live Animals....	3,270	6,809
Indigo and Cochineal.....	—	3,342	Wheat and Barley.....	3,806	5,724
Spices.....	4,266	3,094			

## PERSIA—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-2.	1906-7 to 1910-11.	1901-2.	1906-7 to 1910-11.
	1,000 Krāns.	1,000 Krāns.	1,000 Krāns.	1,000 Krāns.
Russia.....	113,756	207,707	88,420	236,522
British Empire, except India.....	125,254	105,057	25,428	16,438
British India.....		53,578		18,798
Turkey.....	12,515	15,277	18,046	46,564
France and Colonies.....	23,887	14,689	6,505	9,912

*Money.*—1 krān=1000 dinars, an imaginary coin, in which accounts are kept, formerly=1 franc, but now less than 4½d.

## PERU.

Imports.	1902-5.	1906-9.	Exports.	1902-5.	1906-9.
	1,000 £P.	1,000 £P.		1,000 £P.	1,000 £P.
Total.....	3,981	5,017	Total.....	4,346	6,097
Cotton Manufactures.....	506	540	Metals and Ores.....	971	1,614*
Iron and Steel Manufactures ..	391	485	Sugar.....	1,278	1,121
Wheat.....	207	257	Resins and Gums.....	599	912
Machinery.....	174	245	Raw Cotton..	318	733
Wood, unwrought and manufactured.....	189	230	Wool and Hair.....	359	402
Woollen Manufactures.....	193	224	Guano.....	110	293
Paper and Manufactures.....	98	128	Straw Hats...	43	121
Hemp and Jute Manufactures...	70	92	Hides and Skins.....	105	99
			Cocaine.....	103	66

## PERU—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1902.	1906-10.	1902.	1906-10.
	1,000 £P.	1,000 £P.	1,000 £P.	1,000 £P.
United Kingdom.....	1,089	1,591	1,552	2,469
United States.....	592	1,078	706	1,364
Germany.....	624	801	302	398
France.....	238	302	207	512

*Money.*—1 gold libra = 10 soles = £1.

*Weights and Measures.*—The Metric System is coming into general use, except for the customs tariff. The old Spanish system is still common. 1 quintal = 101·44 lb.; 1 arroba = 25·4 lb. = 6·7 gallons; 1 vara = 0·93 yard.

## PORTUGAL

(INCLUDING AZORES AND MADEIRA).

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 M Reis.	1,000 Milreis.		1,000 Milreis.	1,000 Milreis.
Total.....	58,989	64,671	Total .....	29,400	31,196
Iron and Steel and Manufactures...	4,475	4,584	Wine .....	10,023	10,337
Raw Cotton.....	4,041	4,372	Live-stock....	3,844	3,874
Coal.....	4,243	4,057	Cork.....	3,420	3,869
Wheat.....	3,085	4,048	Sardines.....	1,779	2,045
Cod Fish.....	3,350	3,906	Cotton Manufactures....	1,322	1,562
Cotton Manufactures .....	2,751	2,975	Copper Ore....	1,129	1,071
Live-stock.....	2,992	2,577			
Sugar.....	2,363	2,522			
Machinery and Apparatus.....	1,677	2,139			
Rice.....	1,373	1,665			

PORTUGAL—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-9.	1901.	1906-9.
	1,000 Milreis.	1,000 Milreis.	1,000 Milreis.	1,000 Milreis.
United Kingdom.....	17,646	17,821	8,323	7,385
Germany.....	8,970	10,318	2,146	2,381
Spain.....	5,333	4,468	4,432	5,224
France.....	5,681	6,271	762	773

*Money.*—1 gold escudo=1 gold milreis=100 centavos=4s. 5d.

*Weights and Measures.*—The Metric System is the legal standard. The old system is still in use.

## ROMANIA.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Lei.	1,000 Lei.		1,000 Lei.	1,000 Lei.
Total.....	299,000	409,000	Total.....	361,000	501,000
Iron and Steel.....	26,803	57,766	Wheat and W h e a t		
Cotton Manufac- tures.....	46,810	40,366	Flour.....	138,131	227,408
Machinery.....	20,435	38,417	Maize.....	64,392	100,684
Woollen Manufac- tures.....	31,409	27,709	Other Cereals	68,547	82,582
Cotton Yarn.....	13,819	22,544	Petroleum, crude and refined.....	12,144	30,868
Hides, Leather, and Manufac- tures.....	11,481	14,717	Wood.....	14,965	25,715
Vehicles.....	1,603	13,751	Eggs.....	3,879	3,324
Silk Manufactures	6,965	11,304	Cattle.....	2,609	2,283
Coal and Coke.....	5,109	7,904			
Chemical Products and Medicines..	7,252	7,664			

## ROMANIA—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Lei.	1,000,000 Lei.	1,000,000 Lei.	1,000,000 Lei.
Germany.....	84	199	39	31
Belgium.....	5	13	174	148
Austria-Hungary.....	71	100	49	49
United Kingdom.....	56	62	24	49
Netherlands.....	5	6	12	71
Italy.....	22	20	18	54

*Money.*—1 leu = 1 franc. (See France.)

*Weights and Measures.*—Metric. Turkish weights and measures are still in use by the people.

## RUSSIAN EMPIRE.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Roubles.	1,000 Roubles.		1,000 Roubles.	1,000 Roubles.
Total.....	632,000	910,209	Total.....	941,000	1,204,581
Raw Cotton.....	84,091	101,132	Wheat.....	208,724	252,808
Tea.....	48,397	68,019	Barley.....	113,596	133,801
Metal Wares....	29,505	41,647	Other Cereals,		
Raw Wool.....	19,799	37,372	Flour, and		
Rubber and			Meal.....	142,550	169,893
Gutta-percha	20,736	28,629	Wood.....	65,865	116,412
Agricultural			Flax, raw.....	56,422	61,069
Machinery....	19,565	28,281	Eggs.....	48,077	58,032
Fish.....	14,525	21,829	Butter.....	29,656	47,731
Raw Silk.....	13,123	19,408	Oilcake.....	18,817	30,084
Woollen Yarn...	13,654	18,213	Petroleum....	47,381	30,068
Chemicals and			Sugar.....	20,232	26,276
Drugs.....	13,321	17,794	Live Animals.	22,315	24,197
Plants and			Leather and		
Seeds.....	12,123	15,889	Hides.....	11,194	18,992
Hides and Skins,			Fur and Sheep		
raw.....	7,908	13,212	Skins.....	8,617	14,229

RUSSIAN EMPIRE—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Roubles.	1,000 Roubles.	1,000 Roubles.	1,000 Roubles.
Germany.....	210,954	359,454	178,856	326,493
United Kingdom.....	102,967	124,548	156,751	255,765
Netherlands.....	8,550	14,929	84,689	140,267
France.....	27,792	50,989	61,222	79,451
China.....	46,903	86,787	9,711	29,839
Finland.....	22,032	31,777	38,699	48,064
Austria-Hungary.....	24,901	26,861	30,217	49,449
United States.....	34,921	62,909	4,009	7,586

*Money.*—The legal unit is the silver rouble=100 kopecks=2s. 1'6d. ; 1,000,000 roubles=£105,735, 7s. Officially 9'46 roubles=£1. 1 pood=40 lb.=36 lb. avoirdupois; 63 poods=1 ton; 1 chetvert=5'7 bushels= $1\frac{7}{8}$  imperial quarter; 1 verst= $\frac{2}{3}$  statute mile; 1 sazhen=3 arshins=7 feet; 1 dessiatine=2 $\frac{3}{4}$  acres.

In Finland the monetary unit is the marka=100 penni=9 $\frac{1}{2}$ d. The Metric System of weights and measures is universal.

## SALVADOR.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Gold Pes.	1,000 Gold Pes.		1,000 Gold Pes.	1,000 Gold Pes.
Total.....	3,321	3,979	Total.....	5,038	6,569
Cotton Manu- factures.....	1,169	1,324	Coffee.....	3,993	4,631
Flour.....	196	232	Gold and Silver, in bars.....	560	1,267
Hardware.....	114	221	Indigo.....	280	221
Drugs and Medi- cines.....	154	197	Sugar.....	140	206
Boots and Shoes	91	148	Balms.....	88	83
Cotton Yarn.....	123	134			

SALVADOR—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Gold Pesos.	1,000 Gold Pesos.	1,000 Gold Pesos.	1,000 Gold Pesos.
United States.....	733	1,293	835	2,128
British Empire.....	984	1,316	979	436
France.....	328	301	1,237	1,381
Germany.....	447	427	520	1,136

*Money.*—1 gold peso=4s. ; 1 silver peso=1s. 7d. (approx.).

*Weights and Measures.*—Metric.

## SERVIA.

Imports.	1903-5.	1906-9.	Exports.	1903-5.	1906-9.
	1,000 Dinars.	1,000 Dinars.		1,000 Dinars.	1,000 Dinars.
Total.....	58,000	70,000	Total.....	65,000	84,000
Metals and Metal Ware..	5,538	11,014	Wheat.....	10,512	16,901
Cotton Manu- factures.....	5,192	6,388	Dried Plums....	9,474	10,095
Cotton Yarns...	4,416	5,464	Maize.....	872	8,635
Hides and Leather.....	4,290	5,027	Live Animals...	25,912	6,152
Machinery.....	2,316	3,614	Barley.....	1,252	4,906
Woollen Manu- factures.....	2,806	4,416	Meat, fresh and salted.....	2,585	3,829
Chemicals and Chemical Pro- ducts.....	2,751*	2,149*	Hides and Skins	2,422	3,728
Paper.....	1,426	1,820	Fruit, fresh.....	1,560	1,801
Salt.....	800	1,057			

\* Classification was altered in 1906.

## SERVIA—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Dinars.	1,000,000 Dinars.	1,000,000 Dinars.	1,000,000 Dinars.
Austria-Hungary.....	23	23	56	22
Germany.....	7	23	4	21
Turkey.....	2	4	2	13
United Kingdom.....	4	8	0.5	1
Romania.....	1	1	0.5	3

*Money.*—1 Servian dinar=1 franc. (See France.)

*Weights and Measures.*—Metric.

## SIAM.

Imports.	1901-5.	1906-7 to 1910-11.	Exports.	1901-5.	1906-7 to 1910-11.
	£1,000.	£1,000.		£1,000.	£1,000.
Total.....	3,606	5,384	Total.....	4,899	7,615
Cotton Goods....	693	899	Rice.....	3,848	5,094
Treasure.....	541	669	Teak.....	482	759
Iron, Steel, and Machinery.....	230	335	Other Timber...	23	28
Silk Goods.....	130	260	Marine Products	108	158
Gunny Bags.....	154	221	Hides.....	(63)	99
Sugar.....	130	203	Treasure.....	56	70
Petroleum.....	90	143	Pepper.....	61	53
Opium.....	155	132	Silk Piece Goods	(23)	40
Cotton Yarns....	91	109			.
				1901-5.	1906-7 to 1910-11.
				£1,000.	£1,000.
Imports to Siam from United Kingdom.....				396	784
Exports from Siam to United Kingdom.....				140	642

*Money.*—The unit is the silver tical=1s. 6½d.; 13 ticals=£1.

*Weights and Measures.*—1 hap=50 chang=60 kilograms or 132½ lb.;  
1 yot=400 sen=10 miles (approx.).

## SPAIN.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Pesetas.	1,000 Pesetas.		1,000 Pesetas.	1,000 Pesetas.
Total .....	977,000	1,055,000	Total .....	907,000	898,000
Raw Cotton....	101,718	126,478	Iron Ore.....	114,085	103,135
Coal and Coke	71,091	73,572	Other Ores.....	59,999	68,268
Machinery.....	59,819	62,449	Lead in plates, bars.....	69,933	77,944
Chemical Pro- ducts.....	52,016	59,710	Wine.....	66,896	70,556
Timber.....	54,078	43,774	Oranges.....	53,183	60,216
Wheat.....	66,356	42,165	Cotton Manu- factures.....	36,508	53,308
Animals.....	29,109	37,405	Copper Regu- lus.....	35,581	43,095
Fish.....	29,812	35,427	Cork.....	37,667	43,044
Iron and Steel and Manu- factures.....	30,416	31,612	Grapes and Raisins.....	35,819	28,417
Hides and Skins.....	28,183	28,092	Olive Oil.....	43,375	25,405
Coffee.....	20,200	22,572	Hides, Skins, Leather.....	21,160	21,199
T o b a c c o, Cigars, Snuff	25,120	21,922	Almonds.....	17,970	20,165

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Pesetas.	1,000,000 Pesetas.	1,000,000 Pesetas.	1,000,000 Pesetas.
United Kingdom.....	199	193	274	277
France.....	145	185	179	217
United States.....	119	129	19	49
Germany.....	80	105	35	53
Portugal.....	43	51	44	47
Argentine Republic.....	25	32	13	50

*Money.*—1 peseta=100 centesimos=1 franc=9½d. nominally, but between 8½d. and 8¾d. actually.

*Weights and Measures.*—Metric. The old system is still largely used. 1 quintal=220·4 lb. avoirdupois; 1 libra=1·014 lb. avoirdupois; 1 arroba of wine=3¼ imperial gallons; 1 arroba of oil=2¾ imperial gallons.

## SWEDEN.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Kroner.	1,000 Kroner.		1,000 Kroner.	1,000 Kroner.
Total.....	527,000	644,751	Total.....	410,000	515,362
Coal and Coke..	58,682	65,566	Wood, unmanu- factured.....	146,189	154,966
Coffee.....	21,843	28,108	Wood Pulp.....	33,770	58,948
Machinery.....	20,547	27,907	Iron and Steel..	38,053	47,141
Wheat.....	26,128	27,641	Iron and Steel Wares.....	11,346	13,860
Cotton.....	19,422	21,534	Butter.....	36,716	37,513
Skins.....	15,458	20,703	Iron Ore.....	20,468	33,255
Mineral Oil.....	13,632	19,570	Paper.....	19,261	29,135
Other Oil.....	7,966	13,803	Machinery.....	14,599	26,835
Iron and Steel Manufactures	19,748	19,110	Matches.....	8,097	11,140
Wool.....	12,301	15,406	Fish.....	3,929	8,086
Fish.....	13,306	13,703	Cattle.....	2,140	3,437
Woollen Piece Goods.....	10,711	11,897	Horses.....	673	2,202

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.	1,000 Kroner.
United Kingdom.....	132,231	164,146	149,832	173,783
Germany.....	168,839	226,098	60,256	106,070
Denmark.....	64,846	44,885	47,218	51,775
France.....	8,903	22,724	26,105	38,355

*Money.*—1 krona=100 öre=1s. 1½d.

*Weights and Measures.*—Metric.

## SWITZERLAND.

Imports.	1901-5.	1906-10.	Exports.	1901-5.	1906-10.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000 Francs.
Total.....	1,272,000	1,651,000	Total.....	928,000	1,142,000
Silk, raw, thrown, and spun.....	133,449	164,214	Cottons—Rib- bons, Em- broidery, and Lace....	113,824	172,022
Wheat.....	81,382	94,793	Cotton Piece Goods.....	37,095	37,523
Iron and Steel and Manu- factures....	62,644	90,100	Silk Manufac- tures .....	158,643	157,520
Coal, Coke, and Bri- quettes.....	60,871	88,729	Silk, raw, thrown, spun, and waste.....	82,490	107,505
Raw Cotton and Yarn...	44,767	63,154	Watches and Clocks.....	121,298	140,392
Live-stock....	56,712	62,410	Machinery and Loco- motives.....	48,136	70,775
Cotton Manu- factures....	34,129	51,274	Cheese.....	43,115	55,755
Wearing Ap- parel .....	29,712	42,103	Condensed Milk.....	30,447	29,380
Machinery and Loco- motives.....	19,236	41,183	Wool and Woollen Manufac- tures .....	20,391	25,031
Woolen Ma- nufactures .....	33,744	39,147	Dyes: Coal Tar.....	17,182	22,601
Wine.....	35,993	35,000			
Sugar.....	24,725	31,526			

## SWITZERLAND—Continued.

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.	1,000,000 Francs.
Germany.....	320	532	200	271
France.....	261	342	122	139
Italy.....	163	207	48	85
United Kingdom.....	47	99	190	187
United States.....	61	64	88	139
Austria-Hungary.....	69	103	47	70

*Money.*—1 franc=10 batzen=100 rappen or centimes; 25·2 francs=£1.

*Weights and Measures.*—1 centner=50 kilos.=100 pfund=110 lb.; 1 arpent=½ acre.

## TUNIS:

Imports.	1905.	1906-8	Exports.	1905.	1906-8.
	1,000 Francs.	1,000 Francs.		1,000 Francs.	1,000* Francs.
Total.....	90,955	105,079	Total.....	—	92,704
Iron and Hard- ware.....	10,347	12,442	Olive Oil.....	6,290	16,792
Cotton Goods...	—	9,830	Phosphates.....	12,701	15,207
Flour.....	6,206	7,793	Cereals.....	6,570	11,818
Machinery.....	4,663	7,711	Esparto Grass...	3,239	7,209
Grain.....	17,637	5,205	Zinc Ore.....	3,305	3,404
Sugar.....	2,881	2,760	Hides.....	2,000	3,028
			Copper Ore.....	—	2,046
			Cattle.....	—	1,392
			Lead Ore.....	1,659	1,294

TUNIS—*Continued.*

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000 Francs.	1,000 Francs.	1,000 Francs.	1,000 Francs.
Total .....	64,682	107,025	39,127	101,525
France .....	37,512	62,476	17,839	48,848
Algeria.....	2,282	10,156	3,528	26,294
Italy.....	4,912	5,713	6,371	18,642
United Kingdom.....	7,824	9,791	5,016	12,499

*Money.*—Legal coinage similar to that of France.

*Weights and Measures.*—The French weights and measures have almost entirely replaced those of Tunis; corn is still sold in kaffis, each of which=16 bushels. The pik arbi, used in measuring linen, =0·54 yard; the pik turki, for silk, =0·7 yard; the pik andoulsi, for cloth, =0·7 yard.

## TURKEY.

## TRADE WITH UNITED KINGDOM.

Imports.	1901-5	1906-10.	Exports.	1901-5.	1906-10.
	£1,000	£1,000		£1,000	£1,000
Total.....	6,484	7,779	Total.....	5,791	5,406
Cottons.....	4,666	4,899	Barley.....	1,216	871
Woollens.....	437	629	Angora Goats' Hair.....	731	664
Cotton Yarn....	611	528	Raisins.....	491	603
Coal and Coke..	306	370	Wool.....	370	279
Machinery.....	157	197	Woollen Goods	257	244
Iron Goods.....	123	167	Opium.....	—	242
			Valonia.....	274	—

TURKEY—*Continued.*

## TOTAL TRADE OF TURKEY WITH ALL COUNTRIES.

	1898-1901.	1908-1911.
Imports.....	1,000 £T. 19,678	1,000 £T. 27,452
Exports .....	11,733	15,665

*Money.*—£T1 or gold medjidié=100 piastres=18s. ; £T10=£9.

*Weights and Measures.*—Metric is the legal standard, although not enforced. 1 cantar or kintal=44 okes=125 lb. avoirdupois ; 1 kile=20 okes=0.36 imperial quarter ; 1 endazé (cloth measure)=27 inches ; 1 arshin (land measure)=30 inches.

## UNITED STATES.

Imports.	1901-2 to 1905-6.	1906-7 to 1910-11.
	1,000 Dollars.	1,000 Dollars.
Total .....	1,052,840	1,404,971
Sugar.....	76,434	94,532
Hides, Skins, and Furs.....	73,584	92,860
Chemicals, Dyes, and Drugs.....	65,325	83,986
Coffee .....	71,529	76,959
Silk, raw, waste, and cocoons .....	50,773	71,598
India-rubber and Gutta-percha, crude.....	38,925	71,113
Cotton Manufactures .....	51,682	67,513
Flax, Hemp, and Jute Manufactures.....	42,449	56,634
Wood and Manufactures thereof.....	29,237	47,508
Copper and Copper Ore .....	24,935	39,364
Jewellery and Precious Stones.....	32,790	37,823
Wool.....	29,995	36,964
Fruits and Nuts.....	24,899	36,654
Flax, Hemp, and Jute, raw.....	36,260	34,090
Silk Manufactures.....	33,386	33,423
Iron and Steel and Manufactures.....	31,678	33,285
Tin.....	23,776	31,645
Tobacco.....	21,419	30,664
Oils.....	11,616	22,629
Wines and Spirits.....	17,198	21,487
Woollen Manufactures.....	19,128	20,383
Tea.....	14,818	16,015
Leather and Leather Manufactures.....	12,104	15,991
Cacao, crude.....	8,125	13,682

## UNITED STATES—Continued.

Exports.	1901-2 to 1905-6.	1906-7 to 1910-11.
	1,000 Dollars.	1,000 Dollars.
Total.....	1,505,022	1,839,788
Raw Cotton.....	351,723	474,444
Meat and Dairy Products.....	187,343	168,348
Bread Stuffs.....	175,526	163,483
Mineral Oil.....	76,489	98,435
Iron and Steel and Manufactures.....	61,618	97,838
Copper, Ore, and Manufactures.....	62,654	96,679
Machinery.....	58,954	86,236
Wood and Manufactures.....	59,607	80,761
Leather and Manufactures.....	34,795	47,090
Tobacco and Manufactures.....	35,522	40,148
Coal.....	25,433	39,385
Cotton Manufactures.....	37,868	32,742
Agricultural Implements.....	21,063	28,214
Animals.....	44,699	26,889
Oilcake and Oilcake Meal.....	20,524	22,599
Railway and other Carriages.....	10,046	20,988
Chemicals, Drugs, Dyes, and Medicines.....	15,719	20,960
Resin, Tar, and Turpentine.....	15,395	20,426
Vegetable Oils.....	15,339	19,713
Fruits and Nuts.....	15,667	18,376

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901-2.	1906-7 to 1910-11.	1901-2.	1906-7 to 1910-11.
	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.	1,000 Dollars.
United Kingdom.....	165,747	235,480	542,001	550,028
Germany.....	101,998	156,011	170,223	258,223
British North America...	48,788	86,036	103,755	192,172
France.....	82,880	117,193	69,244	116,028
Cuba.....	34,695	102,067	25,012	49,844
Netherlands.....	19,646	28,698	74,694	95,976
Brazil.....	79,178	95,907	10,311	21,064
Mexico.....	40,383	53,628	39,072	57,429
Italy.....	30,555	48,358	30,889	57,171
Japan.....	37,553	70,668	21,140	32,914

*Money.*—1 dollar=100 cents=49·32d.

*Weights and Measures.*—As British, except 1 cental=100 lb.; 1 short ton=2000 lb.; 1 long ton=1 British ton (2240 lb.). Old Winchester gallon used; 1 bushel=0·97 imperial bushel.

## URUGUAY.

Imports.	1901-5.	1906-8.	Exports.	1901-5.	1906-10.
	1,000 Pes. Fuer.	1,000 Pes. Fuer.		1,000 Pes. Fuer.	1,000 Pes. Fuer.
Total.....	25,000	38,000	Total.....	33,000	39,000
Cotton Manu- factures.....	2,365	2,646	Raw Wool.....	10,996	15,647
Iron and Steel and Manufac- tures.....	1,595	2,407	Hides and Skins	9,336	9,329
Sugar.....	1,773	2,127	Meat, salted or smoked.....	4,904	3,840
Wood and Coarse Manu- factures of....	1,078	2,110	Tallow.....	1,680	1,437
Coal.....	1,276	2,049	Living Animals	709	1,425
Wine.....	1,526	1,639	Extract of Meat	1,321	1,199
Haberdashery and Wearing Apparel.....	935	1,159	Wheat.....	601	686
Yerba Maté.....	962	1,099			
Machinery, Agri- cultural and Industrial.....	391	668			

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1901.	1906-10.	1901.	1906-10.
	1,000,000 Pesos.	1,000,000 Pesos.	1,000,000 Pesos.	1,000,000 Pesos.
United Kingdom.....	6	11	2	3
France.....	2	4	5	8
Germany.....	3	6	3	5
Argentine Republic.....	3	2	4	7

*Money.*—1 peso fuerte or dollar=4s. 2d.

*Weights and Measures.*—Metric and old Spanish.

## VENEZUELA.

Total Trade.	1904-5.	1906-10.	Exports.	1904-5.	1906-10.
	1,000 Bolivars.	1,000 Bolivars.		1,000 Bolivars.	1,000 Bolivars.
Imports.....	53,946	51,375	Coffee.....	34,052	38,489
Exports.....	76,605	81,942	Cacao.....	13,661	17,523
			Rubber.....	5,660	8,770
			Hides.....	6,957	6,414
			Cattle.....	7,538	3,579
			Gold.....	2,253	2,002

## DISTRIBUTION OF TRADE WITH OTHER COUNTRIES.

	Imports.		Exports.	
	1903.	1906-10.	1903.	1906-10.
	1,000 Bolivars.	1,000 Bolivars.	1,000 Bolivars.	1,000 Bolivars.
United States.....	14,793	16,413	20,596	31,472
France.....	5,839	3,245	28,340	25,611
United Kingdom.....	19,337	18,322	5,948	8,461
Germany.....	11,551	11,268	4,043	7,612

*Money.*—1 silver dollar=5 bolivars=48·25d. (par value). In accounts the peso, although not in circulation, is taken as equivalent to 4 bolivars.

*Weights and Measures.*—Metric.

**AREA, POPULATION (ACCORDING TO LATEST CENSUS OR  
RECENT ESTIMATES), AND RAILWAY MILEAGE OF  
THE PRINCIPAL COUNTRIES OF THE WORLD.**

**I.—BRITISH EMPIRE.**

	Area.	Population.		Railway Mileage Open.
	1,000 Sq. Miles.	Total Thousands.	Per Sq. Mile.	
UNITED KINGDOM .....	121·0	45,216	373·4	23,417
BRITISH POSSESSIONS.				
<b>AFRICA—</b>				
Cape of Good Hope.....	276·9	2,565	9·3	8,092
Natal.....	35·4	1,194	33·7	
Orange Free State.....	50·3	528	10·5	
Transvaal.....	110·4	1,686	15·3	
Swaziland.....	6·5	100	15·3	—
Basutoland.....	11·7	404	34·6	—
Bechuanaland Protectorate...	275·0	125	0·5	—
Rhodesia.....	439·5	1,594	3·6	2,351
Nyasaland.....	39·8	970	24·4	113
Uganda.....	223·5	2,843	12·7	54
British E. Africa Protectorate	246·8	2,403	9·7	586
Somaliland Protectorate.....	68·0	344	5·1	—
Northern Nigeria Protectorate	255·7	9,269	36·2	266
Southern Nigeria Protectorate	79·8	7,855	98·4	307
Gold Coast.....	80·2	1,503	18·7	188
Sierra Leone.....	24·9	1,403	56·3	255
Gambia.....	3·6	146	40·4	—
<b>AMERICA—</b>				
Canada.....	3,729·6	7,204	1·9	26,624
Newfoundland.....	42·7	238	5·6	770
West India Islands.....	12·0	1,682	139·9	294
British Guiana.....	90·5	296	3·3	95
British Honduras.....	8·5	40	4·7	25
<b>ASIA—</b>				
India, British.....	1,097·8	244,221	222·5	32,839
India, Native States.....	675·2	70,865	104·9	—
Ceylon.....	25·3	4,106	162·1	577
Straits Settlements.....	1·6	707	442·2	21
Federated Malay States.....	27·5	1,037	37·6	559
<b>AUSTRALASIA—</b>				
Commonwealth of Australia..	2,974·5	4,455	1·5	18,013
New Zealand.....	104·7	1,008	9·6	2,827

## II.—NON-BRITISH LANDS.

	Area.	Population.		Railway Mileage Open.
		Total Thousands.	Per Sq. Mile.	
<b>AFRICA—</b>	1,000 Sq. Miles.			
Algeria.....	222·0	5,563	25·1	2,031
Belgian Congo.....	909·6	15,000	16·5	900
Egypt.....	12·0	11,287	939·0	1,480
French Equatorial Africa.....	669·2	10,000	14·9	—
French West Africa.....	1,217·7	11,362	9·3	—
German East Africa.....	384·0	10,000	26·0	743
German South-west Africa....	332·3	75	0·2	1,304
German Kamerun.....	191·3	2,717	14·2	149
Marocco.....	219·0	5,000	22·9	—
Portuguese West Africa.....	484·8	4,119	8·5	642
Tunis.....	47·3	1,906	40·3	949
<b>AMERICA, NORTH—</b>				
Mexico.....	767·0	13,606	17·7	15,804
United States.....	2,973·8	92,027	30·9	246,573
<b>AMERICA, CENTRAL—</b>				
Guatemala.....	48·2	1,992	43·3	433
Honduras.....	46·2	553	12·0	100
Nicaragua.....	49·2	600	12·2	171
Panama.....	32·3	419	12·9	—
Salvador.....	7·2	116	154·5	130
<b>AMERICA, SOUTH—</b>				
Argentine Republic.....	1,117·0	6,000	5·3	19,684
Bolivia.....	708·1	2,268	3·2	778
Brazil.....	3,290·5	23,070	7·0	13,840
Chile.....	292·3	3,353	11·4	3,952
Colombia.....	438·4	4,320	9·9	621
Ecuador.....	116·0	1,500	12·9	400
Paraguay.....	171·2	700	4·2	232
Peru.....	695·7	4,500	6·7	1,656
Uruguay.....	72·1	1,133	15·7	1,570
Venezuela.....	393·5	1,250	3·2	538
<b>ASIA—</b>				
Chinese Dominions.....	4,277·1	433,553	101·3	5,500
Indo-China, French.....	309·9	16,315	52·6	1,183
Japan.....	147·6	51,547	349·1	6,292
Java and Madura.....	50·7	30,098	592·9	1,386
Persia.....	628·0	9,500	15·1	—
Russian Empire.....	6,294·1	25,664	4·1	10,578
Siam.....	195·0	6,250	32·1	680
Turkish Empire.....	429·2	21,000	48·8	2,836

NON-BRITISH LANDS—*Continued.*

	Area.	Population.		Railway Mileage Open.
	1,000 Sq. Miles.	Total Thousands.	Per Sq. Mile.	
<b>EUROPE—</b>				
Austria .....	115·8	28,571	246·7	20,563
Hungary.....	125·3	20,886	166·6	13,034
Belgium.....	11·3	7,423	652·9	5,335
Bulgaria.....	37·1	4,329	116·4	1,200
Denmark.....	15·0	2,757	183·2	2,292
France.....	207·0	39,601	191·2	31,391
German Empire.....	208·7	64,926	311·0	37,949
Greece.....	24·3	2,666	109·0	849
Italy.....	110·6	34,687	313·5	10,800
Netherlands.....	12·5	5,858	465·5	1,984
Norway.....	119·6	2,391	19·2	1,635
Portugal.....	34·2	5,016	146·4	1,780
Romania.....	50·7	5,956	117·5	2,328
Russian Empire.....	2,122·9	141,358	66·5	35,447
Servia.....	18·6	2,912	156·1	606
Spain.....	194·7	19,588	100·6	9,179
Sweden.....	158·6	5,522	34·8	8,677
Switzerland.....	15·9	3,753	235·4	2,238
Turkey.....	104·9	8,000	76·2	1,239

THE MERCANTILE MARINE OF THE PRINCIPAL  
COUNTRIES OF THE WORLD.

	Sailing-Vessels.				Steam-Vessels.				Total Net Tonnage.	
	Number.		Net Tonnage.		Number.		Net Tonnage.			
	1900.	1910.	1900.	1910.	1900.	1910.	1900.	1910.	1900.	1910.
			1,000 Tons.	1000 Tons.			1,000 Tons.	1,000 Tons.	1,000 Tons.	1,000 Tons.
United Kingdom.....	10,773	9,090	2,096	1,113	9,209	12,000	7,208	10,443	9,304	11,556
Germany.....	2,493	2,702	594	507	1,390	1,978	1,348	2,397	1,942	2,908
Norway.....	5,642	1,205	1,002	630	1,171	1,842	506	896	1,508	1,526
France.....	14,313	15,895	510	636	1,272	1,726	527	815	1,088	1,452
Japan.....	3,850	6,537	320*	413	1,329	2,518	543*	782	804*	1,195
Italy.....	5,511	4,741	568	433	446	718	377	874	946	1,107
Sweden.....	2,076	1,635	289	177	911	1,214	325	598	614	770
Russia.....	2,293	2,504	269	250	745	944	366	463	635	728
Finland.....	2,411	2,851	287	321	588	468	54	71	341	392
United States † ..	992	1,029	485*	235	338	497	341*	364	826*	599
Total—The World	—	88,623	—	9,159	—	46,347	—	24,614	—	33,778

\* Gross tonnage.

† Vessels engaged in foreign trade and whale-fisheries.

## COTTON PRODUCTION AND MANUFACTURE.

## CHIEF SOURCES OF SUPPLY.

	Estimated Annual Production.	
	1902-5.	1906-10.
	Thousand Bales of 500 lb. each.	Thousand Bales of 500 lb. each.
World's Total.....	18,121	20,342
United States.....	11,339	12,176
British India.....	3,069	3,509
Egypt.....	1,240	1,264
Asiatic Russia.....	530	1,176
Brazil.....	270	296
Mexico.....	128	173
Peru.....	44	101

CONSUMPTION OF RAW COTTON AND THE NUMBER OF  
SPINNING-SPINDLES IN USE.

	Consumption.		Spinning-Spindles in Work.	
	1908.	1912.	1908.	1912.
	Thousand Bales.	Thousand Bales.	Millions.	Millions.
World's Total.....	15,779	19,831	111.2	126.7
Great Britain.....	3,394	3,765	46.6	48.7
United States.....	4,575	5,368	27.8	30.3
Germany.....	1,759	1,770	9.6	10.5
Russia.....	923	2,035	3.6	7.7
France.....	879	987	6.2	7.1
Austria.....	734	864	3.9	4.7
India.....	505	1,606	1.2	4.4
Italy.....	874	812	3.5	3.6
Japan.....	1,008	1,341	1.6	2.0
Spain.....	307	323	1.6	1.9
Belgium.....	212	234	1.1	1.3
Switzerland.....	91	90	1.4	1.2

## WHEAT PRODUCTION IN 1910.

	Million Quarters.	Yield per Acre.
<b>BRITISH EMPIRE—</b>		<b>Bushels.</b>
United Kingdom.....	7·0	30·5
Australia.....	11·3	13·7
Canada.....	18·7	16·1
India.....	44·9	12·8
New Zealand.....	1·0	28·2
<b>FOREIGN COUNTRIES—</b>		
United States.....	84·2	13·7
Russia in Europe (except Poland)....	68·7	10·6
France.....	31·2	15·4
Hungary.....	22·6	19·3
Italy.....	19·1	13·0
Germany.....	17·7	29·3
Argentina.....	17·5	9·7
Spain.....	17·1	14·6

## PRODUCTION OF GOLD.

	1901-5.	1906-10.		1901-5.	1906-10.
	Thousand Fine Ounces.	Thousand Fine Ounces.		Thousand Fine Ounces.	Thousand Fine Ounces.
World's Total....	15,647	20,967	Russia.....	1,133	1,451
Africa.....	3,050	7,730	Mexico.....	579	1,040
United States....	3,879	4,599	British India....	523	537
Australasia.....	4,077	3,557	Canada.....	923	487

## PRODUCTION OF COAL.

	1901-5.	1906-10.		1901-5.	1906-10.
	Million Metric Tons.	Million Metric Tons.		Million Metric Tons.	Million Metric Tons.
World's Total....	785.4	995.9	Belgium.....	22.8	23.6
United States....	307.8*	412.3*	Japan.....	10.3	14.4
United Kingdom	232.6	265.9	Austria . . . . .	11.7	13.7
Germany.....	114.9	145.8	India.....	7.7	11.6
France.....	32.8	36.1	Canada.....	8.7	9.8
Russia.....	17.9	24.7	Australia.....	7.1	9.4

\* Including lignite.

## PRODUCTION OF IRON ORE.

	1901-5.	1906-10.		1901-5.	1906-10.
	Million Metric Tons.	Million Metric Tons.		Million Metric Tons.	Million Metric Tons.
World's Total....	97.7	131.2	Spain.....	8.2	9.1
United States ...	34.4	49.4	Russia.....	4.5	5.4
Germany.....	20.2	26.5	Sweden.....	3.5	4.6
United Kingdom	13.7	15.4	Austria.....	1.8	2.5
France.....	6.0	10.9	Hungary.....	1.5	1.8

## PRODUCTION OF PETROLEUM.

	Percentage of Total Output.			Percentage of Total Output.	
	1909.	1912.		1909.	1912.
United States...	61.2*	62.8	Dutch East		
Russia.....	22.2	18.0	Indies.....	3.7	2.7
Mexico.....	0.8	6.4	Galicia.....	5.0	2.2
Romania.....	3.1	3.6	India.....	2.2	2.1

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